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SPORTS CARS ILLUSTRATED

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Return from Sebring: P.48

FULL REPORT:

MERCEDES' HOTTEST ENGINE-P.24

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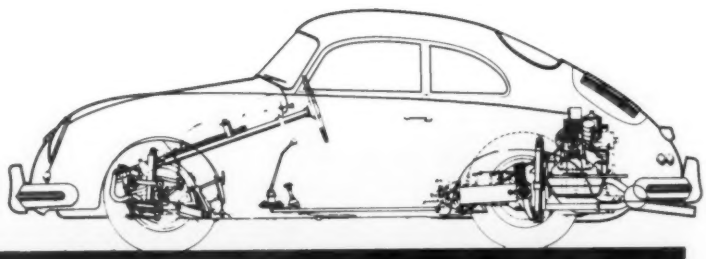

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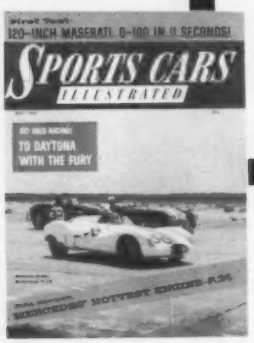

The three cars pulling down for the last turn at Sebring represent things to come. Future issues will bring the story of America's premier sports car event for '57. The Ektachrome was shot by John Christy.

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Regardless of the small blurb on the cover, the story of a hilarious Sebring trip does NOT appear on page 48. It is on page 44 due to a press-time realignment.

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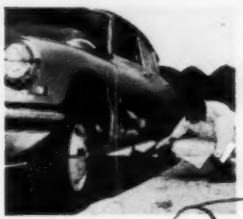

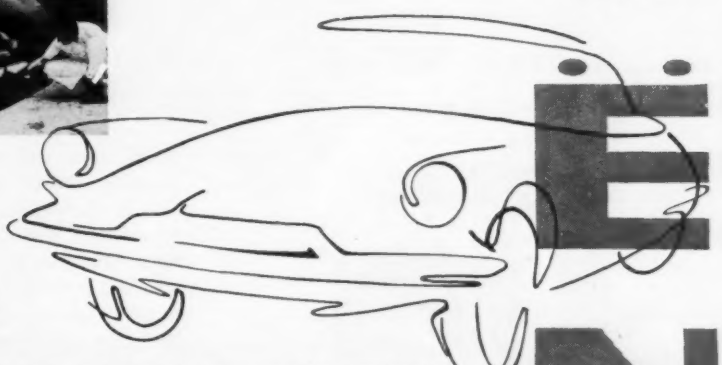

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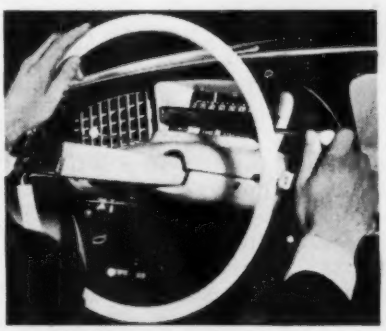

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Competition

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very sincerely yours:

REGARDLESS of propaganda to the contrary you cannot just drive onto a course from the street and then go racing with or without a plug change as your only preparation and expect to do even moderately well.

The production class cars that are winning races are as meticulously prepared as the best full-bore machinery—they have to be since the margin is so small. There are all kinds of tricks as we pointed out last year. Some of these consist of downright cheating on the rules and others consist of precision selective assembly further beyond the means of the average owner than a real *vitesse pure* machine. No one can really blame the factories, distributors and dealers for resorting to this sort of sub-rosa sponsorship; racing does sell cars providing the cars are successful. Further, no legislation by racing groups will ever succeed in stopping this activity unless the fullest possible specifications are made available for *every* production car. This means absolute dimensions of every nut and bolt, absolute port-size dimensions, valve spring rates, cam contouring and timing—in short, a book on every car complete down to the size and number of teeth on every gear. This sort of thing is possible for an organization the size of the FIA but not for the average racing club, even if its technical inspectors were up to such a job, which in the main they are not.

There is one obvious answer: make cheating legal thus nullifying the term and leaving up to the individual owner's ingenuity the amount of suds the car will have. What it amounts to is a modified-stock class (which it is anyway). By all means keep the chassis and body stock in weight, design and material. Allow any and all modifications to the engine short of increasing size beyond class limits. Allow specific modifications designed for safety in the suspension system: such things as traction bars, sway or anti-roll bars, drilled backing plates (factory issue), wheel-plates and 50/50 shock absorbers. One could stop short of allowing twin-cam heads on rocker-arm designs or otherwise changing the basic design of the engine but beyond that, let the owner go as far as he feels practicable. This isn't as expensive as it sounds—a full-race MG can be put together for around $300 or less, for instance, a price far under that of selective precision assembly, special gear sets and other such currently practiced gimmicks.

To our way of thinking, this sort of plan would clear the air and let a lot of folks breathe easier. It would also put the dealers and distributors on their mettle and still make it possible for a winner to come from anybody's backyard.

* * *

Anent safety modifications, we went on at some length a couple of months ago concerning safety wheelplates. This aroused a lot of action but not the kind we expected. We picked a specific instance and in so doing did a disservice to an excellent car and also gave an impression almost diametrically opposed to our own thinking on disc wheels. It was pointed out here that any and all cars equipped with production disc wheels would be better off for safety plates. However we would like to clarify that statement a little further. The statement was not intended as a slam at disc wheels *per se*, nor was it intended to give fulsome credit to wire wheels. It is our feeling concurred in by the likes of Donald Healey, Lofty England, Ted Halibrand, Frank Kurtis *et al* that properly prepared disc wheels are under today's conditions as good as, and under certain circumstances better than, most wire wheels. The production disc wheel, no matter on what car, is designed for touring and normal use. Racing puts strains on wheels not necessarily allowed for by the designer unless the wheel has been either prepared for racing or designed for it. What happened to the car we mentioned could happen to any car and is neither a design fault of that car nor a habit possessed by it. In fact, to set the record straight and to give credit where credit is due, the West Coast distributor of the marque, Worldwide Automotive Import· Inc., has offered to equip customers' cars with safety plates any time they ask for the service, and is recommending safety plates to all those desirous of racing who don't know about them.

An idea as good as that shouldn't be the province of one individual.

—john christy

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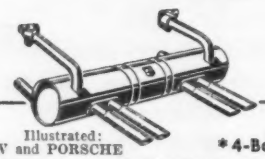
ABARTH



Illustrated: VW and PORSCHE *4-Barrel

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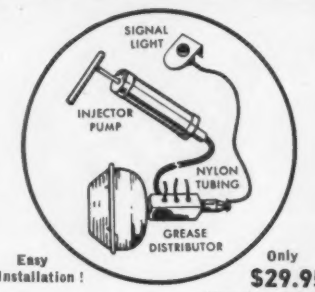

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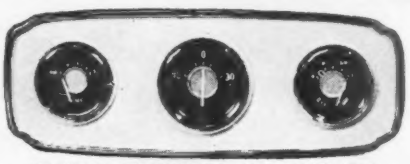

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letters

racing regulations

Gentlemen:

If I may say so, your editorial in the Feb. '57 issue was one of the most ridiculous pieces of reasoning I have ever encountered. There are, certainly, good reasons for any and all regulations concerning spectator safety. There will never be any argument from here against such regulations. But . . . !

I feel that racing car drivers should know and be able to guard against the dangers of racing for themselves. Because of this, I objected to the rules about crash helmets, safety belts, and now, roll bars. Don't misunderstand; I wouldn't drive without helmet or belt, but I don't want to be ordered.

Furthermore, the SCCA seems to be defeating its own ends by driving all the true amateurs out of racing. You say very sarcastically that "roll bars would louse up the styling and—horrors—look ugly." But when you have to drive the car to work, on dates, to church, and so on, the consideration of what the car will look like makes a lot of difference. It makes a lot of difference, too, when you have to worry about selling or trading in the car. Maybe someday I'll have enough money to own a team of D-type Jaguars. If so, I will gladly install roll bars. Right now, I have a TD MG, and I'm not putting any roll bars on it.

Sincerely,
John Scott Keech
Northport, New York

Then, John boy, you won't do any racing 60 days after the specifications are published. A little thought and research on the subject of roll bars will show that they can be demountable and need not look ugly or even protrude beyond the shoulder level. By installing the mounting pads properly you can build a perfectly safe roll bar that will be removable merely by unbolting four to six cap screws. As soon as we receive the finalized specifications of minimum requirements from the clubs involved we'll publish a story on proper construction and mounting. There are a goodly number of people walking around today who might have been rendered very dead if it weren't for roll bars and one of these is the . . . —Ed.

name dropping??

Sir:

So who is Stafford Hutchinson? (p. 13, Feb. '57 SCI.) This sort of name-dropping is almost unethical. Don't tell me who is Stirling Moss—that I know—but WHO IS STAFFORD HUTCHINSON?

Yours, etc.,
David F. W. Smith
Chicago, Illinois

A doll who is interested in disc brakes.
—Ed.

helping hand

Sirs:

This letter constitutes a salute to four members of the sports car fraternity for some outstanding help.

My wife and I were driving to the coast in our magnette when a faulty connection in the fuel line system broke down. Some soldering at a crossroads filling station made a temporary seal and we limped into the town of Prince, Utah. We were hundreds of miles from Denver, Salt Lake or Las Vegas — the nearest places where I could expect to pick up parts. But a service station attendant remembered that Porter Stanfield who operates the Stanfield Radiator Service in Price, drove an import. Stanfield got on the phone and called in Cecil Stotkburger, Morris Taylor, and Bill Webb, other sports car owners in the community. Taylor offered to let me take the needed part from his MG roadster; said he'd leave it in the garage 'til I got him a replacement. Webb had recently installed a Studebaker engine in his MG and thought he might have one of the parts kicking around somewhere. He found it and wouldn't allow me to pay for the part.

These fellows were all strangers to me. Yet they left their business places in the middle of the day and made it a project to help me get back on the road. These are obviously outstanding people to begin with. Yet, I think the kindred spark of interest kindled by the mutual appreciation we have for imports was a factor, too. What could have been an expensive and time-consuming breakdown turned out to be one of the most satisfying experiences of our trip.

Sincerely,
Dick Harris
Denver, Colorado

No doubt about it. The camaraderie existing among sports car owners is unexcelled. We just want to add that this spirit is as common among domestic sports car owners as it is among those who own imports.—Ed.

vw manual

Dear Sirs:

Have just read my first copy of Sports Cars Illustrated and would like to congratulate you on an excellent magazine. I have just taken out a subscription.

Regarding the letters to the editor inquiring about workshop manuals for the VW—I have an excellent copy of one and should any of your readers care to obtain one I could forward copies to them if they write to me at the address below. These manuals sell for 32/6 here, say about $5, so $6 should cover cost of copy and postage.

Sincerely,
A. J. Buckman
49 Waiatarua Rd.
Remuera, Auckland
New Zealand

VW owners—this is a good deal; you know how hard the manual is to come by —Ed.

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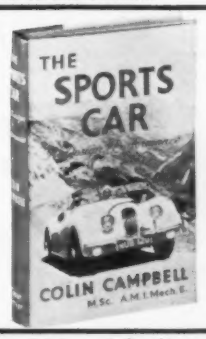

The Technical Correspondence Editor, January issue, **Road & Track,** in answer to a request for a good reference book on suspension and chassis design says: ". . . by far the best book is **The Sports Car: Its Design & Performance,** by Colin Campbell . . ."

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TECHNOTES

By KARL LUDVIGSEN

BACKYARD CORNER

I've been thinking about building a sports car from parts available. I plan to use a Jaguar front suspension, Chevrolet engine (F.I.), and a Jag 4-speed box hooked up to an AC Ace swing rear. It'll be based on a steel tube frame. How about tread and brakes (I'd like one type and not two different makes). Also, where could I get a Fiberglas body built to my specifications? You've got a wonderful magazine 'cause you got me away from the rods!

Maurice Conte
McKeesport, Pennsylvania

We're glad we won you over, but our view is that there isn't so darn much difference anyway! It's just nice to have a car that'll handle as well as run.

The Chev engine is fine, and see our February, 1957 issue for modifications. For competition, it's best to steer clear of the needlessly complex Chev injection system and use the much simpler Hilborn rig.

The AC Ace parallel action rear end is good for a relatively light machine, but should be beefed up for the heavier use that you propose. You might even consider mounting a solid axle in the manner of the Ferrari Testa Rossa (March, 1957 SCI), in combination with a Lyeth or similar limited-slip differential. A Jag axle might go well, and would clear you up on the brake situation. Best to have slightly less rear tread than front for good high-speed handling, and just the other way for low-speed responsiveness.

Rather than build your own Fiberglas body, or have one made specially, why not buy a standard one and rebuild it the way you want it? This would be cheapest by far in the long run. Get in touch with Victress, 11823 H Sherman Way, North Hollywood, California. They have some good shells, as does Sorrell Engineering, 9616 Felton Street, Inglewood, Calif.

PUSH CORRECTION

In the January, 1957 issue, the article "More Push for the Porsche", I believe the valve timing should read as follows:

Intake opens BTDC
Intakes closes *ABDC*
Exhaust opens *BBDC*
Exhaust closes ATDC

Some Porsche pushers may be tempted to use a combination oil for winter driving, such as 10-30. This should be avoided in Porsche and VW, as the oil pressure relief valve depends on a change in viscosity with temperature to bypass the oil cooler.

Doug Brown
Joliet, Illinois

REBORING RENAULT

With reference to inquiries on Renault hop-ups: I have rebored Renault cylinder sleeves to 2¼ inches and fitted Briggs and Stratton pistons from their "N" series. Only other work necessary was to make bushings to fit the Briggs and Stratton piston pins to the Renault connecting rods.

J. Eisenstark
Yorktown Heights, N. Y.

VERY BASIC

Your November, 1956 issue contained an article on the 2.4 Jag engine, which caused quite a discussion in our auto mechanic class. How do you convert liters to cubic inches? How many inches and horsepower are provided by the 1953 4.1 Ferrari mill?

Peter Mellon
Anchorage, Alaska

To convert liters to cubic inches, multiply the number of liters by 61.05. One liter is thus roughly 60 cubic inches, or approximately one quart. A two liter car is thus about 120 cubic inches. Further, of course, each liter contains 1000 cubic centimeters, so 1500 cc. is the same as 1½ liters, or 90 inches. The 4.1 liter Ferrari thus has 4.1 x 61.05, or almost exactly 250 cubic inches. The touring "America" version put out roughly 220 bph, while the tuned "Mexico" cars were probably closer to 270-280 bph. None of the Italian outputs are too reliable, being optimistic for the most part.

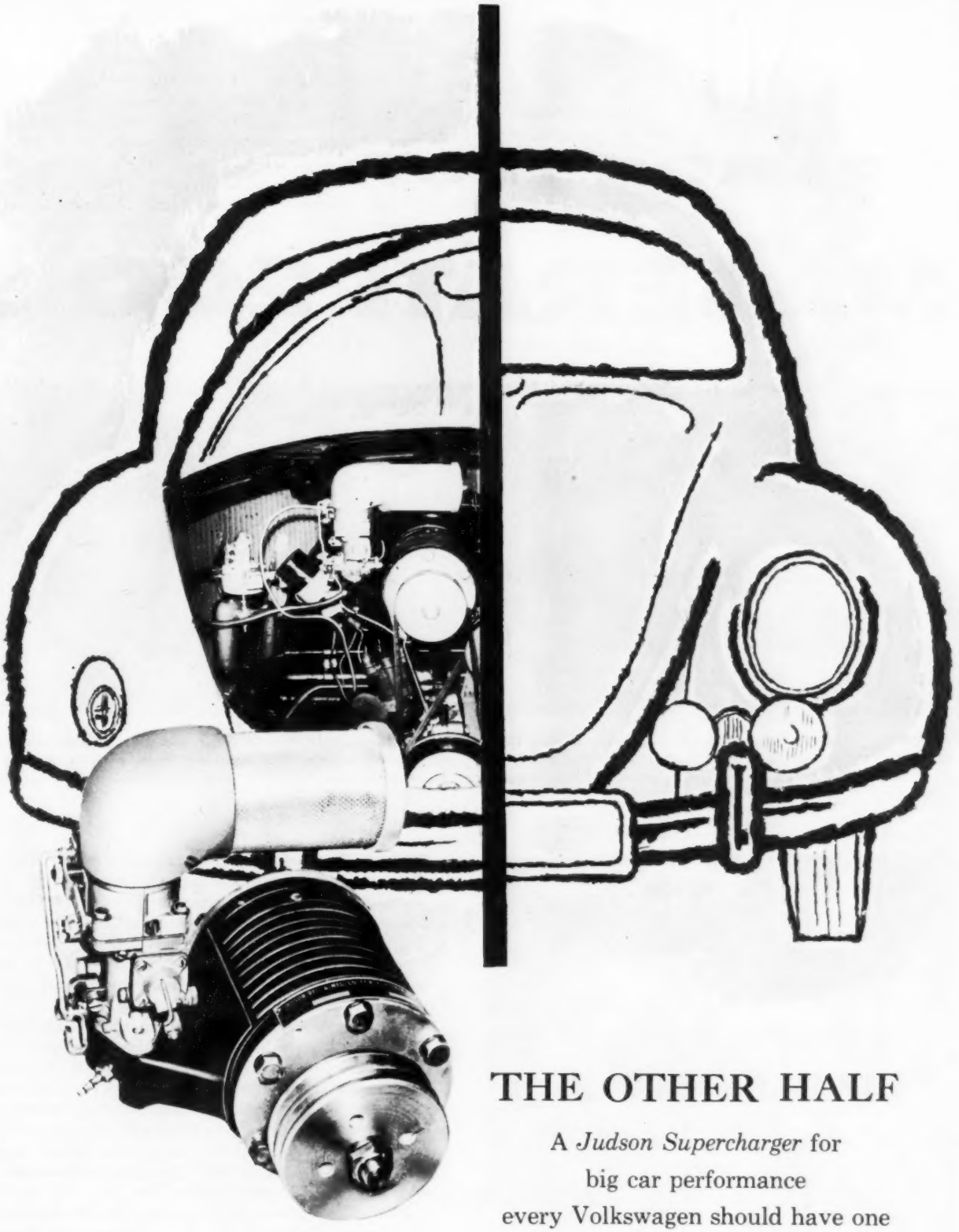
MORE FOR MAGNETTE

I have an MG Magnette, which I feel is quite good but is lacking in get up and go. Could you give me some information regarding hopping this up? I also feel that it leans a little too much on corners. Can you recommend a brand of shocks that will be stiffer?

G. Harrop
Powell River, B.C., Canada

Basically the Magnette engine is a BMC B-type, so much of the MGA manifolding and equipment is directly applicable. Also, the Alexander Engineering Co. Ltd., at Haddenham, Bucks, England, markets a conversion setup for the Magnette, as well as for most other popular English cars. Its reworked head has compression ratio hiked from 7.2/1 to 8.25/1, and cleaned-up ports. 1½ inch SU's, on a new (possibly MGA) manifold replace the stock 1¼'s, and a new, cleaner exhaust system is fitted. Finally the rear end ratio was changed from 4.875 to 4.3. Result was much improved acceleration and top speed around 92 mph. You could either inquire to Alexander or have the modifications made up in your area.

Since the shocks all around are tubular, you could experiment with Gabriel adjustables or Columbus dampers. To retain your own, which are basically good, send them to A. J. Swanson Co., 1526 N. Ivar, Hollywood, California and request them to modify them for better control, describing the conditions that you want to avoid. They specialize in this type of work.



THE OTHER HALF

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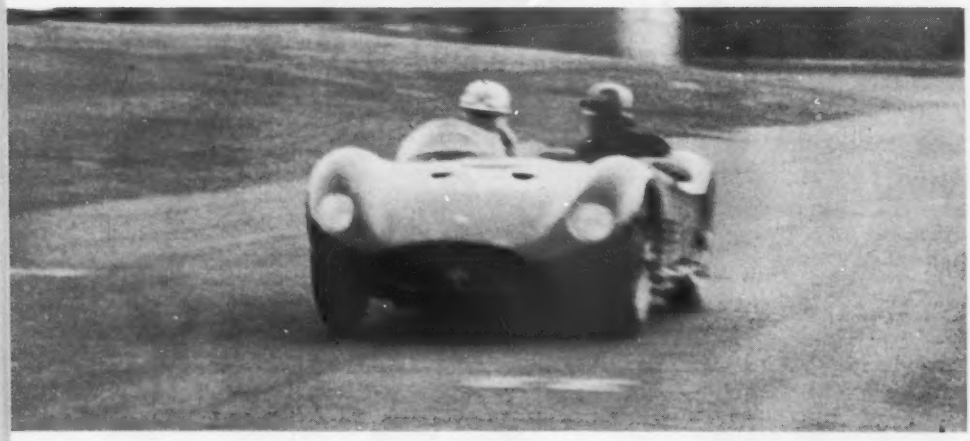
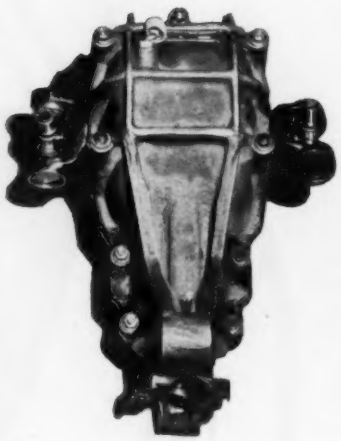
SCI

TRACK TEST:

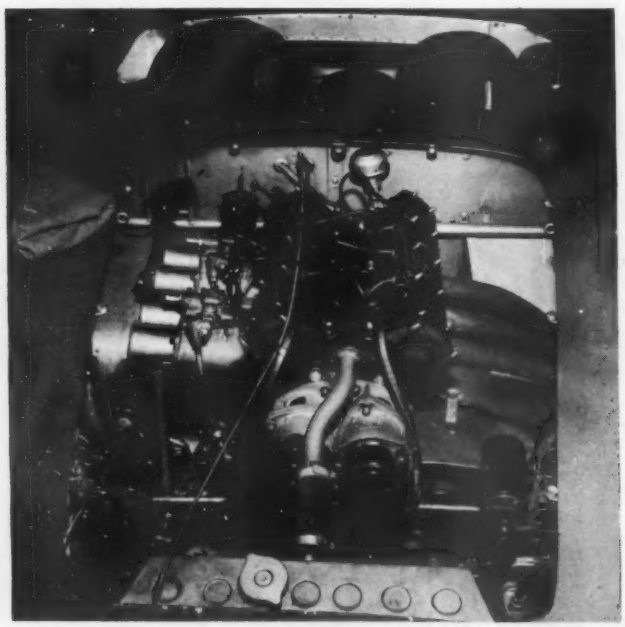
MASERATI 200 SI



Devouring the finishing straight at Paramount Ranch, the little Maser takes SCI's test crew for their quickest ride to date. Top end is not high, but it gets up there in a desperate hurry, making it ideal for short-course campaigning.



Axle case is rough cast, has breather at top. Four bearings hold pinion, and drive is through ZF differential.



Engine concept was inspired by old 4CLT, by way of Platé modifications for old two-liter Formula II. Test car here has twin coils, distributors; others come with dual mags or one of each. 1½ liter four has 40 mm Webers, while 200 SI goes to 45 mm and has air correction ram tubes.

FANGIO, kissing his fingertips, has said, "The Maserati is the ideal competition car." This is clearly an honest statement; when the perennial world's champion has driven freelance he's driven the marque of the trident of Bologna. All its traditional excellence has been carried to new heights of refinement in the new 200 SI, the four-banger that replaces the immensely successful six-cylinder 2000 S.

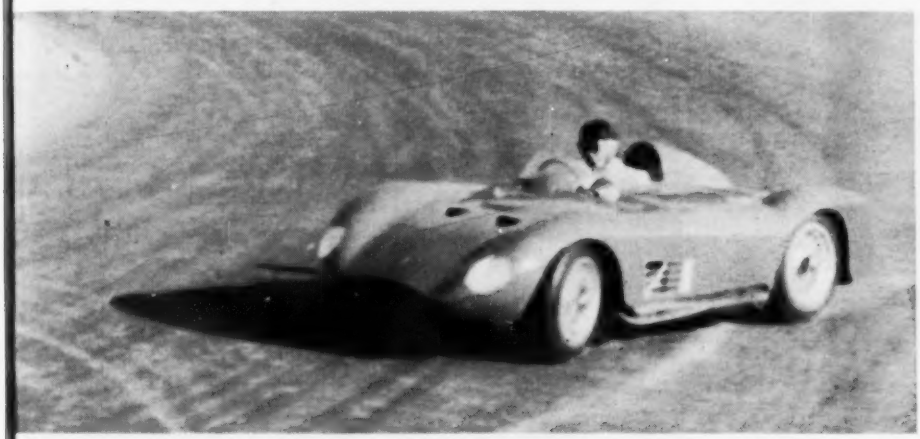
The two-liter four is a small car that looks, sounds and goes like a big car but does most things better. It looks exquisite. It's one of the most hairy-sounding of hot bolides, with an exhaust note that booms massively at warmup revs and turns to a screaming voice of absolute authority in its upper rev range. Its acceleration and speed suggest a much heftier-engined machine but its agility puts it above that class. The new two-liter Maserati is, as its makers don't mind saying, a genuine *opera d'arte*.

Except for piston displacement the 190-bhp 200 SI is identical to the 140-bhp, 1500 cc Type 150 S. The smaller-engined machine made its debut at Nürburgring in August 1955, setting a new class lap record and remaining unchallenged throughout the entire 500-km race. The 200 SI did not begin to compete until last Fall but since then has clobbered all comers and has been good competition for the Testa Rossa Ferraris. Its first place in the GP of Rome (Behra) and first and second in the GP of Caracas (Behra, Schell) late last year made it clear that the 200 SI will be one of the hottest contenders in the '57 season.

SCI was privileged to test the first complete new two-liter

Maserati to reach the U.S. The Paramount Ranch management graciously made its excellent road racing course available for the occasion. In the interest of obtaining a broad cross-section of opinion we invited drivers Bill Pollack, Bruce Kessler, Lance Reventlow and Carlyle Blackwell to help us wring out this exceptional machine.

Our test driving consumed an entire day and we were able to do everything with the car except drive for really quick lap times: horses, stabled on racing occasions, were grazing in the open. However, most of the course was perfectly safe for high-speed work and each of us learned a great deal about the 200 SI and was profoundly impressed —Reventlow to the extent that he bought it on the spot, and Kessler ordered a similar car for factory delivery in April. Lance and Richie Ginther took the test car to Willow Springs where consistent times of 1'44" were turned; that's one second over the lap record for sports cars.



Pollack puts 200 SI stability to the test, finds balance and handling in top class. Slide here was readily provoked by stab at throttle. Maser understeers, and if taken too far this can bring it back into line.

150 S crank 2 two mm. less stroke, is otherwise very similar to two liter part. Bearings are wide, well-spaced, leaving thick webs. Flywheel, clutch case below.

Maserati's new two-liter seems to be quite capable of *overall* wins on circuits up to about 2.2 miles in length, where straightaway speeds do not exceed 120 mph. Five standard gear ratios (ours was the 4.75) provide versatility as follows:

	Maximum Speed at 7500 rpm — 600 x 16 Tires				
Final Drive	I—1.895	II—1.525	III—1.235	IV—1.000	mph/1000 rpm in IV
4.22	79	98	132	152	20.2
4.444	76	94	128	146	19.5
4.75	70	88	119	132	17.6
5.00	67	76	113	126	16.8
5.25	63	73	108	121	15.8

These machines, of course, are not fitted with speedometers. In order to obtain a velocity curve we calculated the rpm equivalents of speeds from 30 to 100 mph, in the appropriate gears. We began the acceleration tests cautiously, wishing to take no chances on overrevving the engine. We took the tach up to 7000 rpm, dropped the clutch, and clocked elapsed times up to 60 mph in First gear. Wheelspin was severe but balanced and there was no fishtailing—just straight, parallel streaks of rubber. Slowness in getting off the line is indicated by the 2.3 seconds needed to get from zero to 30 mph (3180 rpm), while only six-tenths of a second elapsed between that and the 40-mph (4250 rpm) time. It's at about this point that the engine's torque begins to come in strongly. However, its thrust at lower revs is thoroughly unlike most high-output two-liters and it feels more like a 2.5 or a three.

Furthermore, it does not feel like a highly-stressed engine. It rushes up to its 7500-rpm maximum feeling clean, solid and at home all the way. It feels so smooth at 7500 that you feel it should wind to 8500 without effort. None of us was in that much of a hurry but it was obvious that there was no reason not to twist it pretty tight in the indirect gears when the need arose. So, while our first zero to 70 mph elapsed time included a shift to Second (6000 rpm at 70), we decided to run up to 70 in First (7500 rpm). This made for a gain of 1.1 seconds ET—6.4 over 7.5. The engine still felt so content that we decided to stay in Second up to 90 mph, which equals 7700 rpm. This gave us a zero to 90 of 10 seconds flat and let us know that at that rotational speed there was not the hint of a suggestion that the rev peak was in sight. We did the standing quarter-mile in an effortless 13.9 and let it go at that, even though this same car had been clocked at the San Fernando drag strip at 13.0. Acceleration times are a function of how hard you want to press the machine, among other things, and we were all so filled with respect for this Maserati that we had no desire to press it. You don't flog a racehorse until the chips are really down.

Even though I sometimes have fantasies about building a Lotus-Chrysler (reinforced), I am well aware that acceleration in itself is just one of many automotive virtues. Admittedly, the achievement of outstanding acceleration within a small-displacement limit is a complicated problem. But there are many other problems of automotive design that are equally subtle, and it's in the solution of some of these that Maserati has always shone brilliantly.

Here is a car that epitomizes the modern trend to put

MASERATI TEST DATA

TEST CAR:

Type 200 SI competition two-seater. Supplied by Maserati Southwest Distributors, 5101 Lankershim Blvd., North Hollywood, Calif. Price, $11,480.

TEST CONDITIONS:

Number aboard	1
Top position	No top
Temperature	68° F

PERFORMANCE

TOP SPEED:

Calculated from tach	132 mph

ACCELERATION:

From zero to	Seconds
30 mph	2.3
40 mph	2.9
50 mph	3.4
60 mph	4.4
70 mph	6.4
80 mph	9.1
90 mph	10.0
100 mph	11.8
Standing ¼ mile	13.9

ACCELEROMETER DATA (Tapley Meter):

Pulling Power in:	Lbs/Ton	Grade %
I	Off Scale	—
II	575	30
III	420	22
IV	350	18
Drag at 10 mph	Not measurable	
60	50	

SPEED RANGES IN GEARS:

Gear	MPH
I	70
II	90
III	119
IV	132

BRAKING EFFICIENCY:

Summation—zero fade

SPECIFICATIONS

POWER UNIT:

Type	In-line four
Valve Arrangement	d.o.h.c., gear-driven
Bore & Stroke (Engl. & Met.)	3.62 x 2.95 ins./92 x 75 mm
Stroke/Bore Ratio	0.81/1
Displacement (Engl. & Met.)	121.6 cu. ins; 1993 cc.
Compression Ratio	9/1
Carburetion by	Two dual-throat Webers
Max. bhp @ rpm	190 @ 7500.
Max. Torque @ rpm	148 @ 5600

DRIVE TRAIN:

For Transmission Data see table in text of report.

Final drive ratio (test car)	4.75 to one; 8/38.

Axle torque taken by radius rods and frame-mounted final drive housing (de Dion).

CHASSIS:

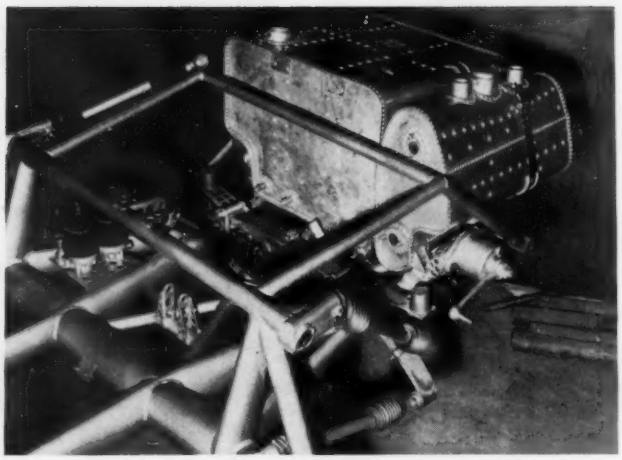
Wheelbase	86.6 ins.
Front Tread	49.2 ins.
Rear Tread	47.3 ins.
Suspension, front	Coil & wishbone IFS, anti-roll bar.
Suspension, rear	de Dion axle, transverse leaf spring.
Shock absorbers	Houdaille hydraulic
Steering wheel turns L to L	2
Brake type	Two leading-shoe hydraulic, F&R; two master cylinders; centrifugal ventilation
Brake lining area	128.6 sq. ins.
Tire size	600 x 16

GENERAL:

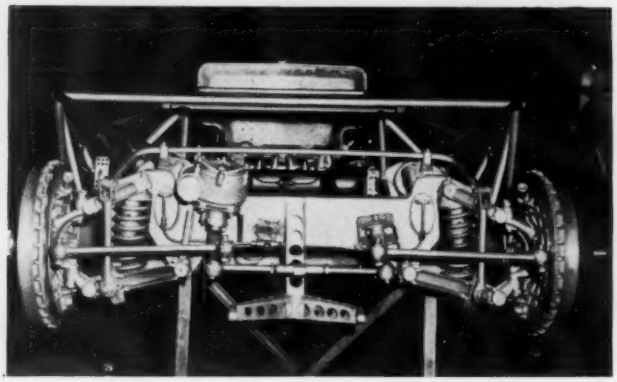
Weight, test car	1510 lbs.
Weight distribution, F/R	48/52
Fuel capacity, U. S. gallons	Std. 30.6; optional 42 & 49.

RATING FACTORS:

Bhp per cu. in.	1.56
Bhp per sq. in. piston area	4.62
Torque (lb-ft) per cu. in.	1.22
Lbs. per bhp, test car	7.95
Piston speed @ 60 mph, top gear	1677 ft per min.
Piston speed @ max bhp	3690 ft per min.
Brake lining area per ton (test car)	171 sq. ins.



Seen before mounting of differential and de Dion tube, rear end shows cross spring, parallel trailing arms, Houdaille shocks and fuel pumps. Test car tanks differ.



Forged suspension arms have latest I-section, mount to boxed front crossmember. Steering is by three-piece track rod. Wide tube frame can be seen at rear.

"big" engines in small, light chassis (see Lotus, Cooper and Vanwall). But if you've driven some of these muscular lightweights you know that there is a point at which their fragility becomes a matter of sober concern. Body panels begin to flex, rattle and hammer. Frames start working, you feel the car snaking all around you, and you begin to wonder if you ought to be driving so fast.

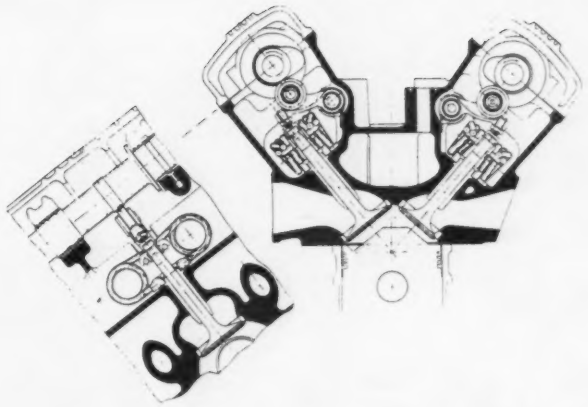
Pollack, who has a flair for the well-turned phrase, puts it this way. "The most important thing the architects of this car have done is to give the driver a sense of security at all times. You can't get this in the locker room from Knute Rockne. Neubauer can tell you the car is perfectly safe at 190 mph. But if it doesn't *feel* safe there are few drivers who will ever take it close to its potential top speed. They won't want to get their necks out that far."

This new Maserati, like most members of its breed, feels good at *any* speed. Even when all four wheels are sliding gloriously you still know you're in control of the car. The word "balance" keeps occurring as the best word to describe this machine's deportment. Every element is perfectly mated to every other: engine to transmission to final drive; weight to power to gearing; weight distribution to wheel-

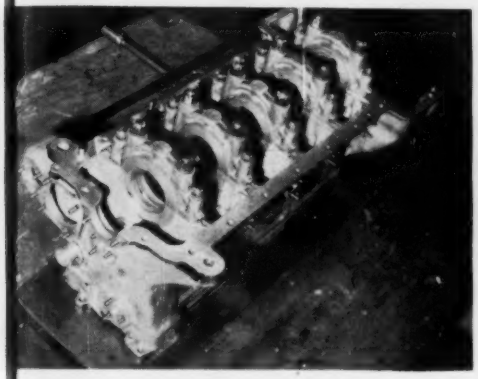
base to tread; steering to wheelbase; brakes to weight; strength to lightness; driver accomodations to vehicle limitations.

The car's cornering characteristics are remarkable. You know that all you have to do is turn the steering wheel, hit the throttle or brakes, depending on the situation, and the car will respond. It leads with its front end, a good thing in a high-speed car and a well-accepted mark of a good-handling machine. The front end drifts first, but it doesn't wash out. This is understeer. It lets you play with the throttle instead of the steering wheel. If a car leads with its rear end you already have too much power and don't know where you are. But if the front end leads first you just continue to apply power until the rear end comes around and then control your drift with the throttle.

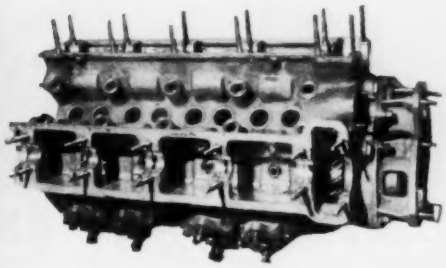
This Maserati's adhesion is in the Excellent category. A peculiar thing about adhesion is that you can have too much of it as well as too little. This car has enough to allow you to set up a drift without sliding too much—enough to achieve, in other words, the fastest possible speed through



Cutaway shows adjustable roller fingers and hairpin valve springs. Cams rotate toward each other, accounting for opposed placing of fingers. Piston cutaways are deep.



Crankcase and sump separate at crank centerline, lateral strength being provided by four-bolt caps, wide webbing.



Each cam has five Thinwall bearings, is driven by helical gear train. Ten studs go right through to main bearing caps.

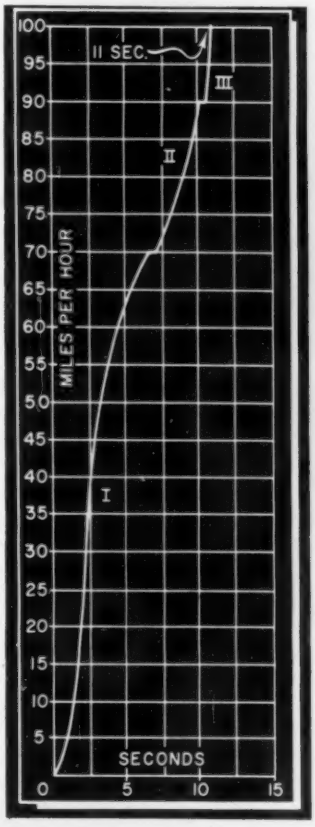
Latest Maserati bodies are clean, Lotus-inspired, have longer nose for better penetration and lower duct diffusion angle.

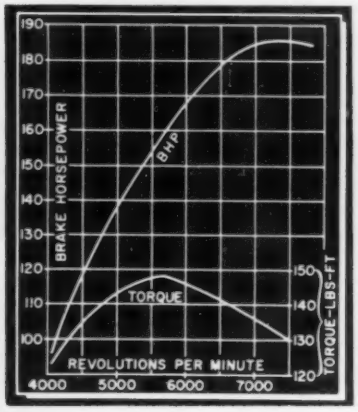
the turns for the weight or size of the car. Our experts doubt that there is any two-liter that can go through a turn more quickly than the 200 SI. It moves through even slow turns with great speed *and* maneuverability. You can change your line at will in this machine, while in others you're forced to hew to the line you've committed yourself to.

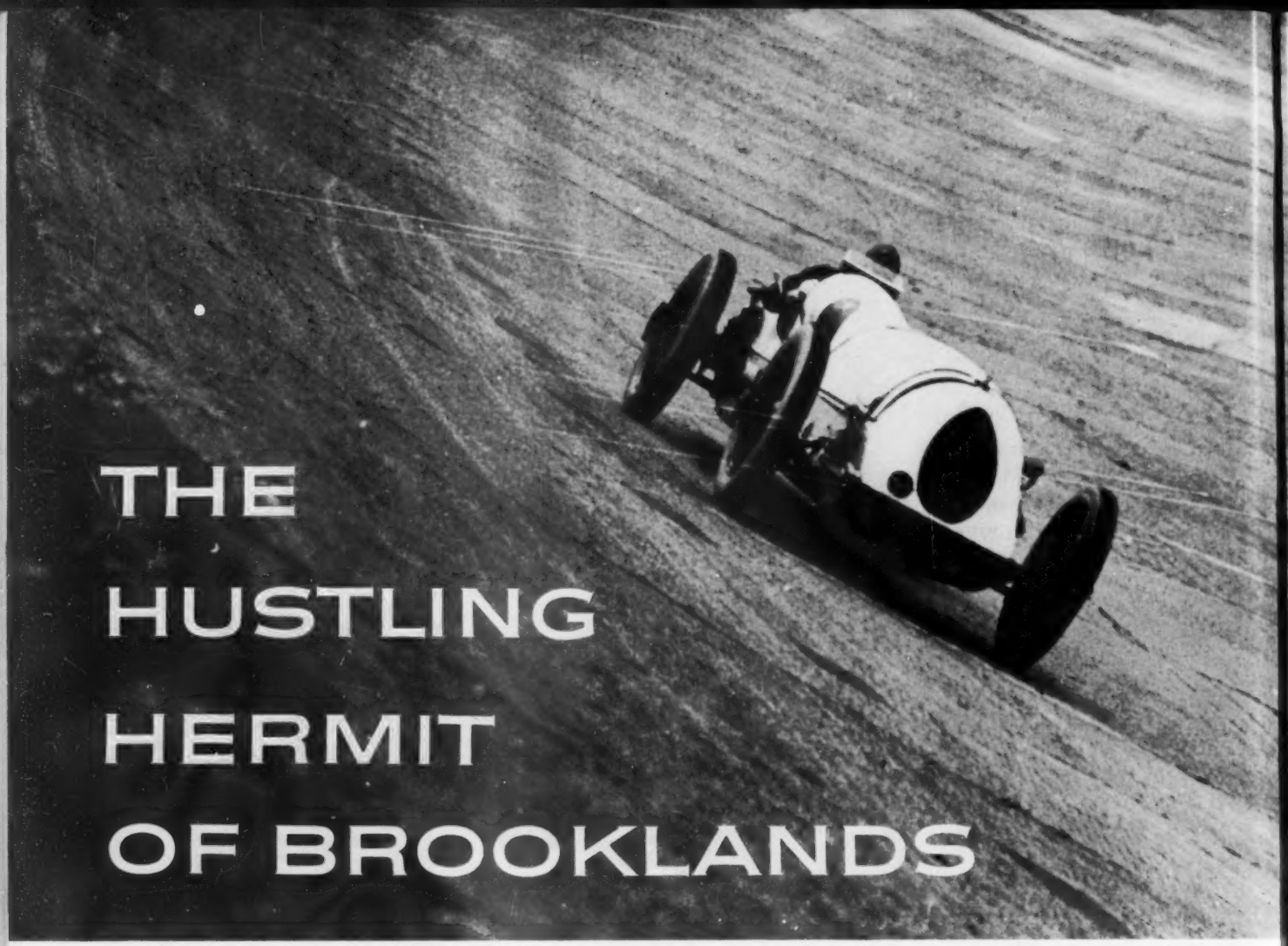
The brakes are wonderful and have no tendency to pull in any direction. They pull evenly and firmly and needless to say are truly fade-proof. Some cars have very sensitive brake pedals and this is rough in competition or in city traffic. You should be able to hit the pedal hard when you have to and not have the wheels lock. Pollack put the Maserati's brakes to this test at very high speeds but could find no tendency to lock. The brakes just took hold and did a superlative job of stopping the car.

This is an obvious subtlety. The Maserati has many that are more sophisticated. Its throttle pedal travel, for example, is very long. A short throw makes feathering the throttle a touchy thing coming out of a turn. With a long throw you can achieve a fine adjustment of power.

(Continued on page 50)







THE HUSTLING HERMIT OF BROOKLANDS

The six fast years of J. G. Parry Thomas.

By DENNIS MAY

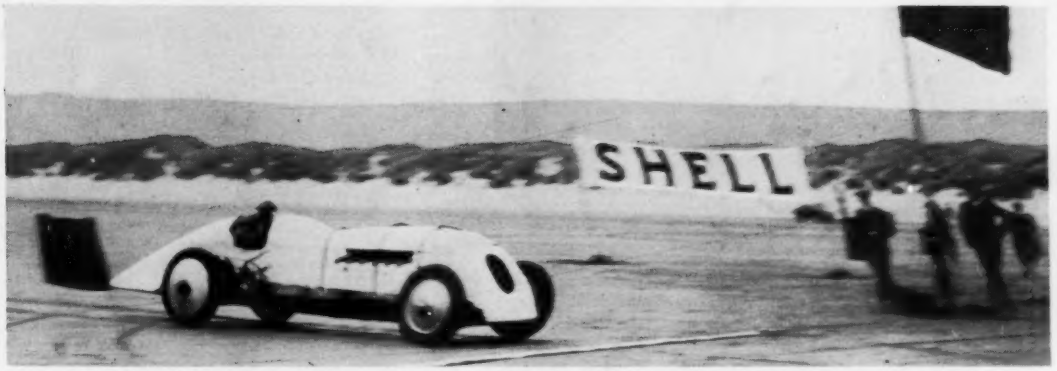
AT PENDINE, a tiny coastal hamlet in South Wales, the first Sunday of last March was slated for curious solemnities. Following normal A.M. devotions in the village chapel, a detachment of the congregation trudged three miles eastwards along the foreshore and scattered flowers on an unmarked grave—the grave of a 600 horse-power car.

Sunday the third of March, 1957, marked the thirtieth anniversary of the sudden and bloody death of the greatest speedman and automobile engineer that Wales ever cradled, John Godfrey Parry Thomas. Thomas's remains lie far beyond sabbath hiking range of Pendine—200 miles away at Byfleet, in the shadow of the desolate but intact bankings of Brooklands track, where in the heyday of this now extinct English Indianapolis, Thomas frazzled records galore and ran up countless race victories. But *Babs,* his huge Thomas Special car, rests and rusts forever beneath the sands of Pendine, a hundred yards from the spot where she foundered at 180 miles per hour on the fateful March third, 1927. For the reverent Pendiners her grave is the one local link with a compatriot who bred legends as a hedgehog breeds fleas.

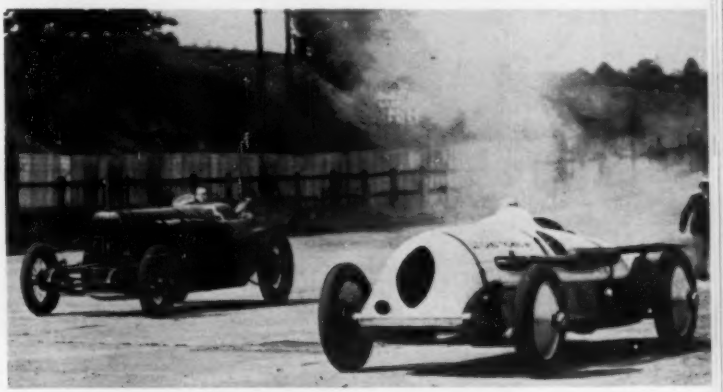
Parry Thomas, shortened to Tommy by the few who knew him well enough to risk nicknames, was shooting at his fourth Land Speed Record when the end came. *Babs* made the west to east run over the mile at record-plus speed, then was turned around and headed back towards Pendine village. About halfway through the trap the big white pan-technicon shed its landward back wheel, did a 180-degree spin, traveled tail first for five hundred yards, looped two loops and caught fire. Thomas was killed in the first split second of the eruption, brained by a broken driving chain. It was this chain, describing a murderous arc, that had amputated the wheel from the axle, setting *Babs* off into a *danse macabre* that no human power on earth could have controlled.

Two days later, with authority from the dead man's relatives and associates, a posse of Pendine rustics dug a great pit in the nearby dunes, manhandled the scorched and battered hulk to the brink and toppled it in. Not one of Thomas's mechanics could bring himself to watch as sand was shovelled in on top and the carcass finally vanished.

In his short career of speed—it lasted less than six years —Parry Thomas attained a popularity that was practically unanimous and came as near to adulation as anything the phlegmatic British allow themselves. Moreover, so far from courting popularity he seemed to despise it, and in his appearance and manner there wasn't one of the stock



The beginning of the end. Parry Thomas sends "Babs" hurtling past the start line on the down run at Pendine sands. Turning around to make the second leg of the two-way record attempt, a drive chain broke on the return run at 170-plus, ending car and driver.



LEFT, Parry Thomas in the huge straight eight Leyland - Thomas rides high Brooklands banking. RIGHT, Start of the terrifying battle between Tommy, at right, and Ernest Eldridge in the LSR F.I.A.T. Thomas won by a hair, RIGHT, BELOW — Thomas grunts instructions to mechanic working on V-12 Liberty engine in "Babs" just prior to last Pendine run.

trappings of a public idol. His heavily jowled face was homely almost to the point of ugliness, and in repose was host to an expression halfway between a frown and a scowl. Except in conversation with children, whom he adored, and his technical equals, who were few, he seldom smiled and usually talked in brusque monosyllables.

He dressed his big shapeless frame in untidy, shapeless clothes: on or off the track, he was rarely seen in anything but baggy flannel pants of obsolete cut and an oil-spotted Fair Isle jersey. He never threw or attended parties and remained a batchelor to his death at the age of forty-three. The remark by a contemporary funnyman that "he kept a bargepole specially for not touching women" expressed the essence if not the letter of his attitude to the female sex.

Thomas made his abode within the actual precincts of Brooklands; his bungalow, appropriately named The Hermitage, was in fact the only habitation the track possessed. Here, his sole companions were two enormous police dogs of uncertain temper, Togo and Bess. News papermen pumped him in vain for the there-was-I stories that tripped so tritely off the tongue of his chief rival for Land Speed honors, Captain Campbell, later Sir Malcolm. He wrote no books, no articles for the public prints. So far

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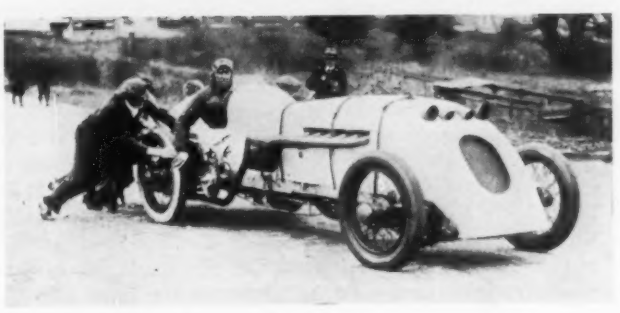


Wide World

"Babs" gets push start for 1926 record run at Pendine. This one was successful but short lived. Malcolm Campbell grabbed it back, forcing a fatal return.

LATE NEWS FROM BMW:

Since we received this exclusive factory coverage from our European Correspondent, we've been alerted by the Hoffman Motor Car Co. that great things are happening. Full production and active retailing of the 507 model will bring the price down to $4,988 FOB New York, complete with heater and leather upholstery. The whole effort of the Hoffman sales organization will be placed behind this car, and there should be pilot models at selected sub-distributors across the country, by the time you read this. By July they should be coming in off the Münich line, side-by-side with plenty of spare parts.

At the same time some detail changes have been announced. The interior has been widened slightly, by altering the door trimming, and the dash has been changed once and will be redesigned again to eliminate traces of "cheapness" in appearance. Shifting the fuel tank back next to the low-placed spare has opened up some storage space behind the seats. Up front, a higher compression ratio and a switch to SAE rating brought the engine output to 205 bhp. This change, and the resulting new performance figures, are reflected in our specification chart but not in the text. Very much later this year, if all goes well, 507's should be seen in SCCA Production competition, with the aim of publicizing and improving the breed.

Beauty From Bavaria

Italianesque styling of 507 has been talk of sports car world since car was introduced well over a year ago. Hardtop can be bolted on without removing cloth top. Power has now been stepped up to match looks and handling, which are tops.

By JESSE ALEXANDER

BESIDES being the home of the best beer in the world (Milwaukee notwithstanding) Münich, Germany has other attractions. Churches and museums for those who like that kind of entertainment, a Bohemian area of town that rivals anything to be found anywhere else in the world, and for the lover of fine automobiles, Münich is the home of BMW, Bayerische Motoren Werke, which when simply translated means Bavarian Engine Factory.

Aside from making the Isetta, BMW is turning out a luxury line of passenger cars that rival the best made anywhere in the world. This manufacturing program consists of the Model 501 2 liter, 6 cylinder sedan, and the Model 502, which is available with either a 2.6 or a 3.2 liter V-8. The Model 505 is a special long-chassis job made for a seven-passenger limousine body built outside the factory. But as of the 1955 German Automobile Show at Frankfurt, two new models were added to the BMW line: the exciting Models 503 and 507 were the hit of the show, and the former has gone into production. It's a four-place luxury type of sports-touring car that comes either as a hard top or as a convertible. It is a truly lovely automobile but expensive.

Actually, any BMW lover will give you ten good reasons why BMW build nothing but the best. They have to be good if for no other reason but that otherwise they are way overpriced. For instance, the six cylinder four door sedan is almost a thousand dollars more than its biggest competitor, the Mercedes-Benz 220S.

There is a drive from certain quarters inside the factory to get back into automobile racing, and with a large and well organized motorcycle racing department run by Alex Von Falkenhausen, BMW could have the basis for a first-class racing organization. At the present time a lack of money is holding things up. They have a design for a two liter sports car, but it is extremely doubtful if it will ever appear on the track.

The closest that BMW has yet come to building a competition car is the new Type 507 "Touring-Sport Wagen" which is the subject of this report. When you bring up the

FACTORY TEST DATA
TEST CAR: BMW 507 CONVERTIBLE

TEST CONDITIONS:

Number aboard	Two
Top position	Up
Temperature	60°F, dry concrete surface Wind 10 mph.

PERFORMANCE

TOP SPEED:

	1956	1957
Two-way average	127 mph.	139 mph.

ACCELERATION:

From zero to	Seconds	Seconds
30 mph	3.1	2.9
40 mph	4.4	4.2
50 mph	5.6	5.5
60 mph	7.2	7.0
70 mph	10.6	9.4
80 mph	14.3	12.3
90 mph	18.3	15.6
100 mph	23.0	19.4

HILL CLIMBING ABILITY:

2nd gear	33% at 43.4 mph
3rd gear	19% at 62.1 mph
4th gear	11% at 86.9 mph

SPEEDS IN GEARS; AT 6000 RPM:

I	37.9
II	62.1
III	94.4
IV	128.5

SPEEDOMETER CORRECTION:

CORRECT THROUGH RANGE

FUEL CONSUMPTION:

Average driving (under 60 mph)..25 mpg

BRAKING EFFECTIVENESS:

Pounds Pedal Pressure	
10	7%
20	36%
30	61%
40	76%
50	86%
60	89%
70	90%
80	90%

SPECIFICATIONS

POWER UNIT:

Type	90° V-8
Valve Arrangement	Overhead in-line, pushrod
Bore & Stroke (Engl. & Met.)	3.23 x 2.96 ins (82 x 75 mm)
Stroke/Bore Ratio	0.92/1
Displacement (Engl. & Met)	193.2 cu. ins (3168 cc)
Compression Ratio	8.2/1
Carburetion by	2 Zenith 32 NDIX downdraft
Max. bhp @ rpm	SAE 205 @ 5700
Max. Torque, lb ft @ rpm	174.2 @ 4000

DRIVE TRAIN:

Transmission ratios	
I	3.39
II	2.07
III	1.36
IV	1
Final drive ratio (test car)	3.7
Other available final drive ratio	3.42, 3.89
Axle torque taken by	Link to housing

CHASSIS:

Wheelbase	94.4 ins.
Front tread	52.2 ins.
Rear Tread	55.8 ins.
Suspension, front	Parallel wishbones, torsion bars
Suspension, rear	Torsion bars, links to rigid axle
Shock absorbers	Koni adjustable tubular
Steering type	Pinion and sector
Turning diameter	36.5 ft.
Brake type	2 LS front, Alfin drums, Hydrovac booster
Brake lining area	198 sq. ins.
Tire size	600 x 16

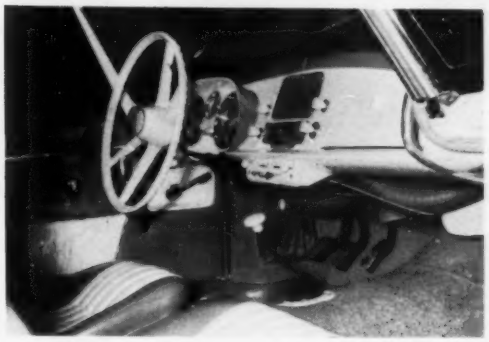
GENERAL:

Length	172⅝ ins.
Width	65 ins.
Height	49½ ins.
Weight, test car	3173 lbs.
Fuel capacity—U. S. gallons	25

RATING FACTORS:

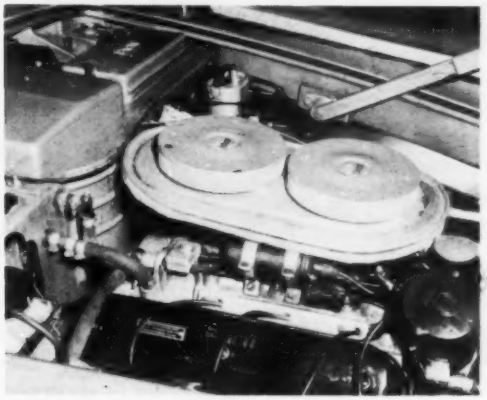
Bhp per cu. in.	1.06
Bhp per sq. in. piston area	3.13
Torque (lb-ft) per cu. in.	0.90
Pounds per bhp—test car	15.5
Piston speed @ 60 mph	1380 fpm
Piston speed @ max bhp	2460 fpm
Brake lining area per ton (test car)	125 sq. ins.

European Editor and factory man fling 507 through tight bend near works. Supple suspension gave good traction on bumpy roads.



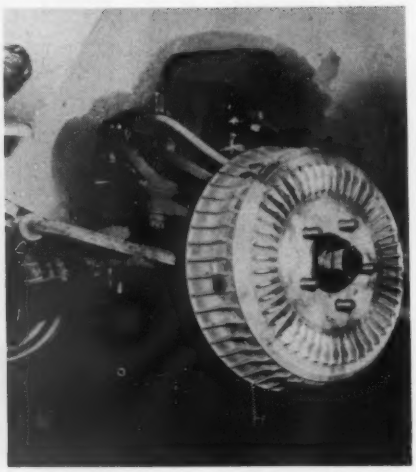
This is latest interior, which will be revised more before production. Seating position is tops, though gear lever could be moved back.

Fuel tank has been moved to right rear, to clear space behind seats for added luggage. Trimmed floor covers tank and spare wheel.



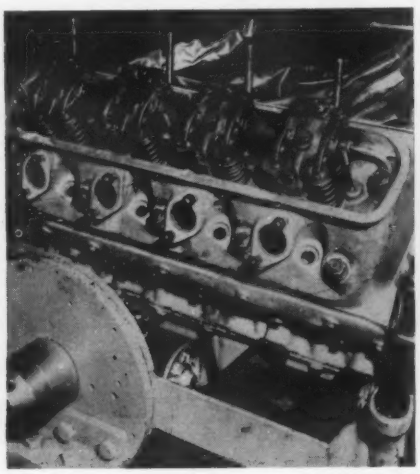
Engine room is tidy, housing Europe's only large-production V-8. At top is big, quick-opening brake fluid reservoir, near tool box.

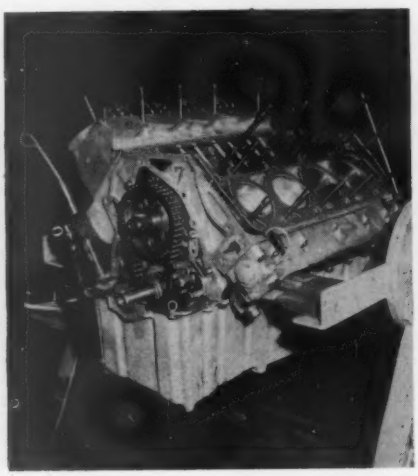
Bypassed experimental engine for 507 had four dual-throat Solex carbs, on manifolds feeding pushrod operated valves, hemispherical heads.

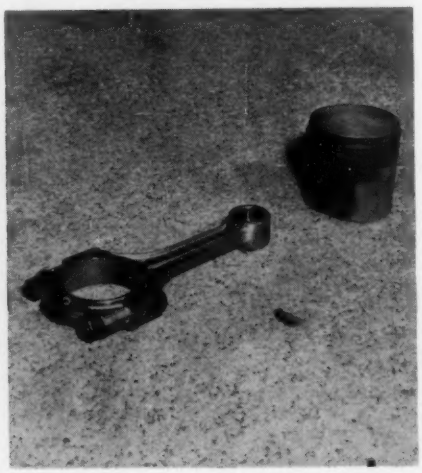


Well-finned brakes match boosted engine power. Suspension is simple, forged wishbones; steering box is integrated with supporting pillar.

Five-bearing crank is husky forging, ample journal overlap. Counterweights are big, drilled for balance. Sprocket is for roller timing chain.





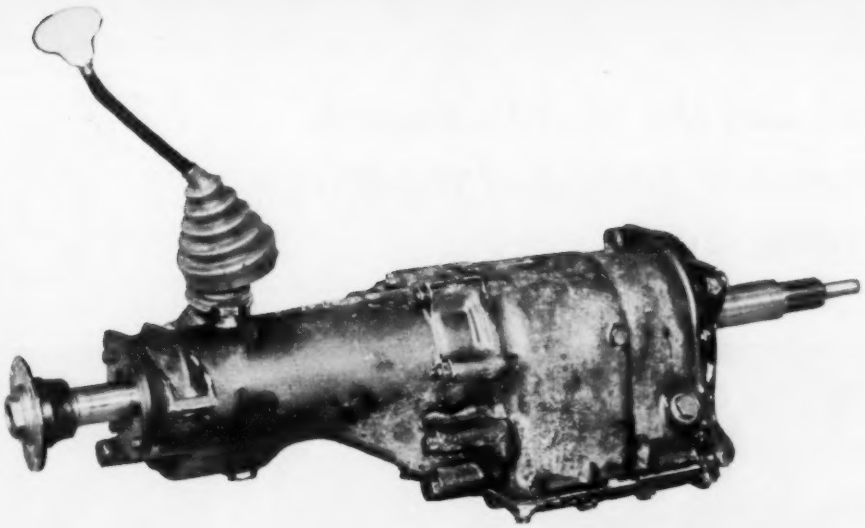


LEFT: Rocker-box rig will be old story to users of US V-8's, but workmanship is something new. Oil feed is direct to big rocker shaft; four-port exhaust is ideal for tuning.
CENTER: Block under assembly reveals cam drive and deep, stiff oil pan. At left is combination dipstick housing and crankcase breather. Oil-water exchanger is on right.
RIGHT: Rod shank is slim, drilled for oil to wrist pins, but has massive big end. Bolts are big, distribute stress well around bearing shells. Piston carries four rings.

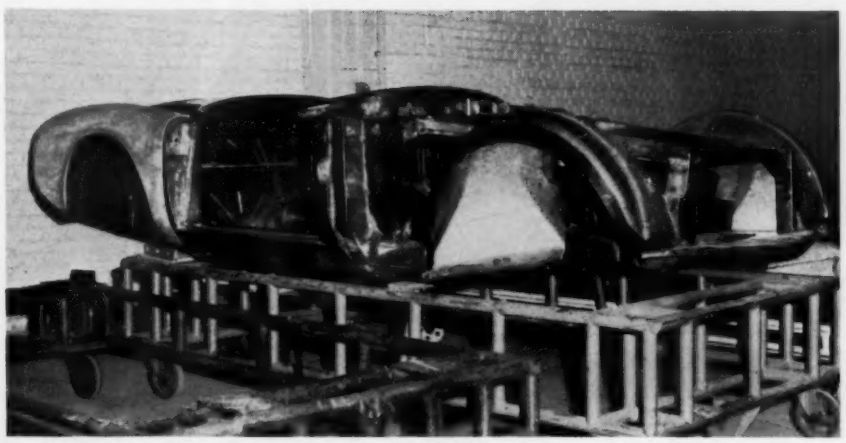
subject of the 507, someone immediately begins to compare it with the 300 SL, so let's do that. It is by no means as fast as the SL, but it is, on the other hand, a much more practical car, having adequate luggage space, easier entrance and exit, and is a good deal easier to service.

The BMW is available either as a closed or open car, with a light metal detachable hard top available at extra cost. Other extras include a metal tonneau cover, knock-off wheels and aero screens for competition.

The 507 is powered by a modified 3.2 V-8 engine that is basically out of the 502. The difference is in the carburetion, the dual exhaust system, the aluminum alloy heads and the increased horsepower. Factory figures give the 507 150 bhp at 5000 rpm. When first announced last year, only 140 were quoted but now through higher valve lift ten extra horses are being found. For short periods 162 bhp



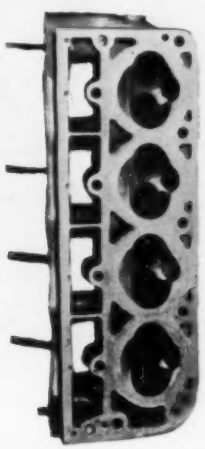
Four-speed close-ratio box, with remote control linkage on left, is built by ZF for BMW. Mounting pad at left braces engine-gearbox group.



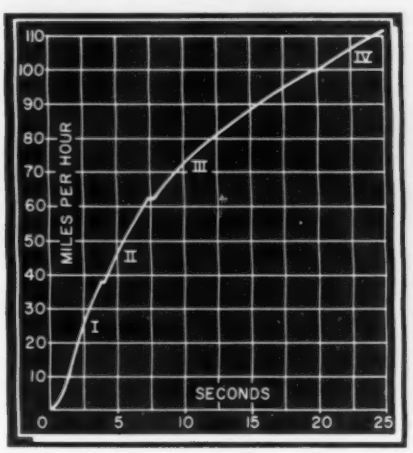
Assembly of prototype 507 shows integration of chassis with bodywork, rugged bracing from front suspension points back to cowl.

Shocks are Dutch Koni tubulars, have proven well. At top is damper for steering, rear torsion bar left.

507 chassis, seen in front of 503 unit, is lightest and simplest built by BMW. Oval tubing has high beam strength.



Studs are few, but well spaced. Shaped chambers have gouged sides to avoid valve shrouding.



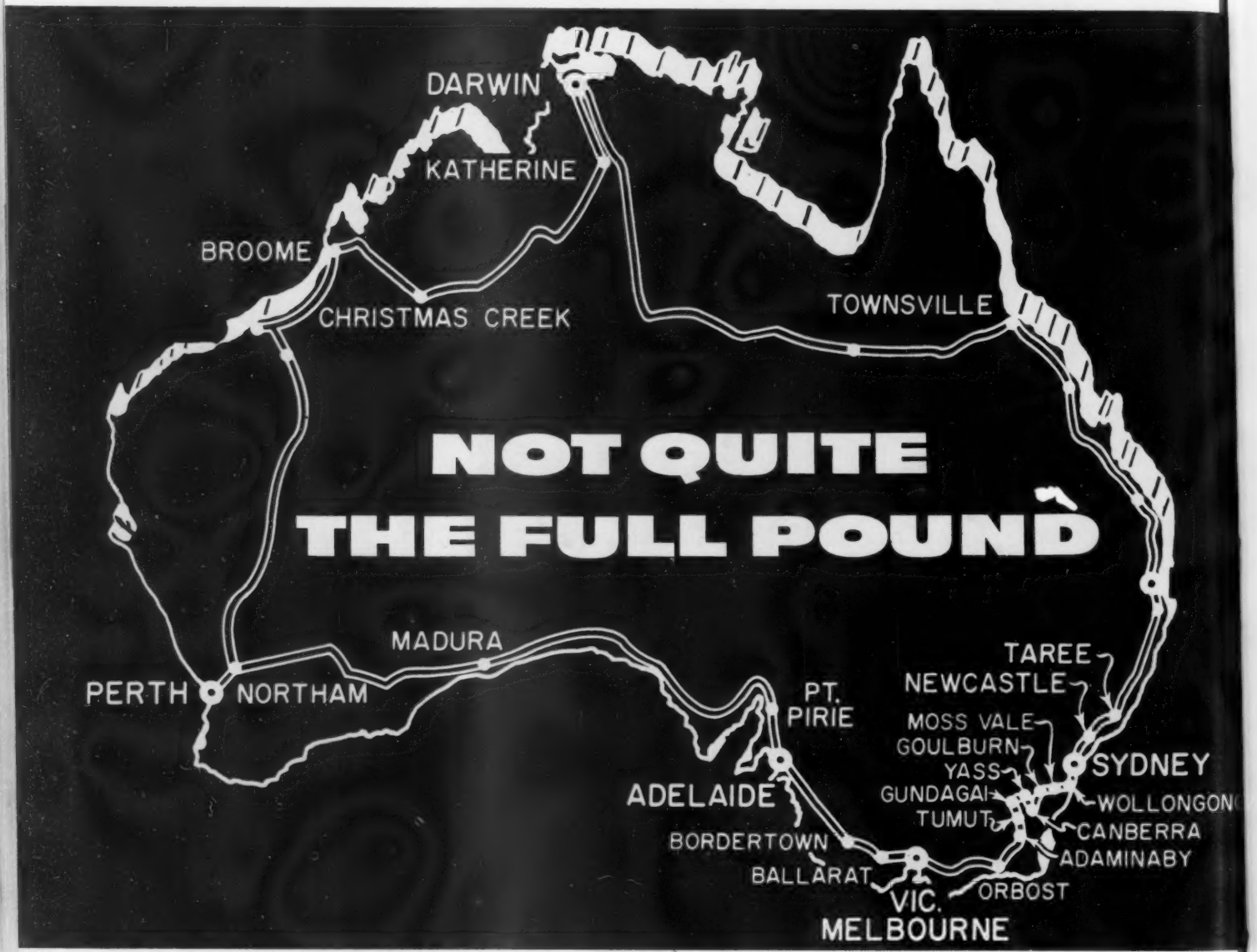
can be reached at 5500 rpm. This may not seem much for this size, but extracting more power would undoubtedly introduce the problem of reliability, and BMW does not want to have service difficulties with these cars. Torque characteristics of the engine are good, maximum of 174.2 lb. ft. coming in at 4000 rpm. Dual Zenith downdraught carburetors are standard equipment. Compression ratio is 7.6:1, certainly modest by American standards. Valves are overhead, pushrod operated while the pistons are aluminum and the crankshaft rides on English Vandervell bearings.

The one thing that is unique with this lone German V-8 is the presence of wet cylinder liners. The clutch is hydraulically operated and drives a beautiful ZF four speed close-ratio gearbox. Brakes are top quality; two leading shoes at the front. The drums are light metal Alfin of generous size, and braking is assisted by the ATE "Hydrovac" booster.

Front suspension is via normal wishbones hitched to longi-

(Continued on page 50)

Australia's Redex trial was the World's longest, maddest, hairiest automobile event and the drivers . . . well, as their countrymen say, they're . . .



By WILLIAM L. WORDEN

AT MACKAY, a small port well up on the tropical Queensland Coast in Australia, wind clawed from the South, firing spray like bullets over the town's wharves and yanking at boat lines inside the breakwater. But the taxi ignored this, as well as other traffic, small boys and a happy collection of dogs, as it bounced over rough streets and out onto the breakwater, slowing only when it was necessary to turn around at a commercial dock where a dozen longshoremen barely moved.

"Have to be careful here," said the driver. "Them wharfies don't like something you do, they all quit work—and then there's all bloody hell to pay for the bloke who caused it."

He braked again, at a finger pier where foodstuffs were being handed aboard a small cruise ship. "Looks like the start of a regular southerly buster," the driver said. "Guess I'm glad I ain't going with you. But you might as well sit in here until they're ready. No use in getting all spray before you have to." He flicked off the meter at five shillings sixpence, disdaining to charge for waiting time. The five-year-old taxi, showing signs of its service, sighed a little; and as the wind continued to blow, the body creaked now and then.

Without real interest, we talked in snatches about the weather, the low islands and the Great Barrier Reef off-shore, the sweetlips and red reef trout to be caught, the already (at 9 a.m.) baking town on the shore. Presently, I noticed that the speedometer was curiously placed on the

left hand dashboard of the right-hand-drive Ford taxi, which also carried a special clock and compass. The driver's interest quickened only when I asked about the instruments. "For the navigator," he said. "Helps him in the Redex Trial. We put in an extra petrol tank, too." He gestured toward the floor of the tonneau, where a capped pipe was so placed that an extra fuel tank could be carried inside, its contents drained into the regular tank as needed. I had not noticed, because in this country, no sensible single patron ever rides in the back seat of a taxi. Do it, and the driver may decide you're class-conscious—and let you out where he pleases, not necessarily where you want to go.

"It works, right enough," said the driver. "We came in thirtieth last year. Dinkum little car." It was the first time I had heard an Australian actually use that adjective nationally credited to them.

Presently, the cruise ship was ready for passengers. In a burst of hands-across-the-sea fellowship, the driver even carried a bag down the pier for me, then looked out again at the end of the breakwater, where an approaching fish boat careened as it negotiated the narrow entrance to quiet water. "This wind'll be a buster, mate, for sure," said the taxi-driver. "I wouldn't go with you for the world."

Just as the ship got underway (for what turned out to be a reasonably quiet week's cruise) I looked back toward the town. The taxi already was underway, doing a good sixty before it reached the shore end of the breakwater. Practicing, I should think, for the race to come.

But I more or less forgot about the Redex Trial until, in South Australia, approximately a thousand miles from Mackay, there was a question about how to get out to the northwest of Adelaide another eight hundred miles. "Personally," said the newspaperman advising me, "I wouldn't take my own car much past Port Augusta. Rough beyond that; and by the time you get to Ceduna, it's gibber desert." He paused, thoughtfully. "Not that some don't do it," he said. "For two years now, those Redex people have come roaring through. Don't know that I'd be guided by that, though. Those chaps—well, they're not quite the full pound."

A day later, the little Auster plane we had chartered in preference to driving was three or four hundred feet above the edge of the Nullarbor Plain, where a railroad track stretches three hundred miles without a foot of deviation. Down below in the early morning were dingoes, running madly from the plane's sharp shadow; now and then a few wild camels or brombies, also running. Otherwise, the plain was limitless, flat and empty—only the millions and millions and millions of little round stones, the gibbers which have driven wanderers mad just from stumbling over them, covering the baking desert. Briefly, there was some sort of a road beneath us; but it was marked only by the wheel tracks, in and out, around and over the gibbers. Here and there, along the miles of railroad track, there was the ghost of some hamlet, the roofs burned off the houses, the adobe walls crumbling. These were places where, sometime, there had been a little water, but not for long.

I could not deny that it would be possible to take an automobile over that terrain. In the dry season, too many do take autos through. Possible, but absolutely nothing more.

I did not think about the Redex again until some weeks later and approximately fifteen hundred miles north. Down from Darwin on the Arafura Sea, we had followed a metalled road through the heart of the Northern Territory (it was built with American help during World War II) to the hamlet of Katherine where, if possible, there were more flies in daylight and more mosquitos at night than we had seen before. Three or four weeks after the end of the rainy season, Katherine was baking, with a quarter-inch of dust on houses, windows and on the tables beyond the bar of the town's only pub. When beer was served, flies came just to sit on the rims of the sweating glasses and cool off.

"Not bad here this time of year," said a lean cattle-station man at the next table. "Later, it gets a little warm."

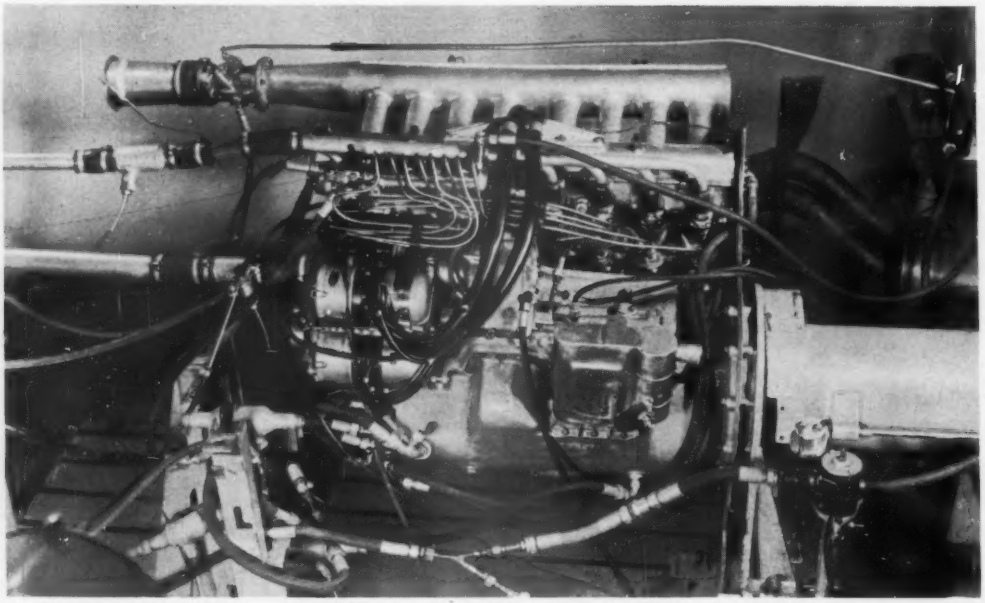
(Continued on page 56)

Packed to the limit with gear, these Redex trialsters prepare to meet hazards of tortuous back roads of Australia. Extra lights helped them through fog and dust. Tire strapped to front was precaution against getting bashed by leaping kangaroos.

Navigator J. Harris sits in back of Redex car cramped with built in table, extra speedo, clock, oil can, machette, digging-out tools etc. Most cars were rigged Okie style for journey.

SPORTS CARS ILLUSTRATED
MAY '57

M 196 MERCEDES HOTTEST ENGINE



This seemingly complex mass is probably the most potent powerplant for its size yet devised. It's an early 1955 version of the welded-block Mercedes GP engine, on test at the factory. We hope this story will bare most all of its "mysteries".

At left below is air plenum chamber with curved tuned pipes, used on '54 GP mills and early '55 300SLRs to get smooth body lines. Less concerned with aesthetics in 1955, straight rams at right were adopted, giving boost to entire range of power.

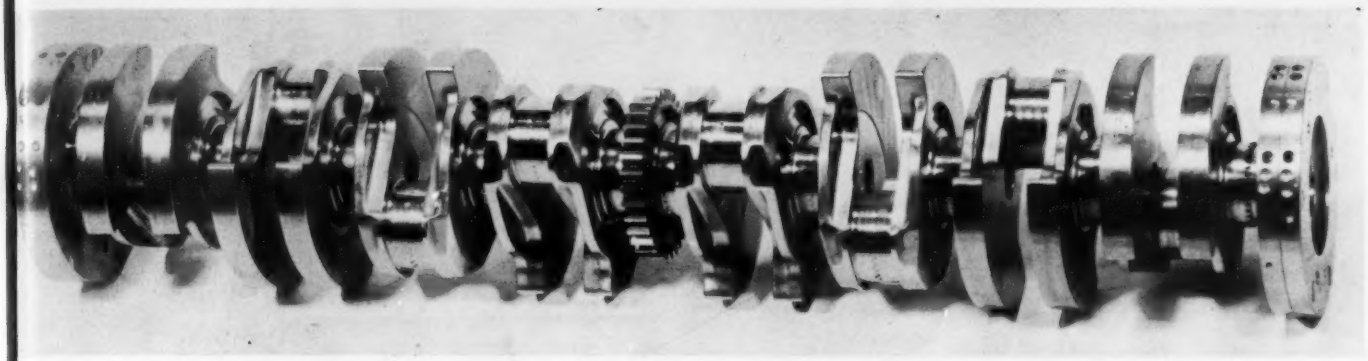
By KARL LUDVIGSEN, SCI Tech Editor

IF YOU'VE been able to tear your eyes away from all the machinery surrounding these remarks, you deserve praises for courage and a few kind words. We don't pretend to have been in on this work from the start, or to be on hail-fellow terms with Scherenberg and Uhlenhaut, but we're just as curious as you are about their design ideas.

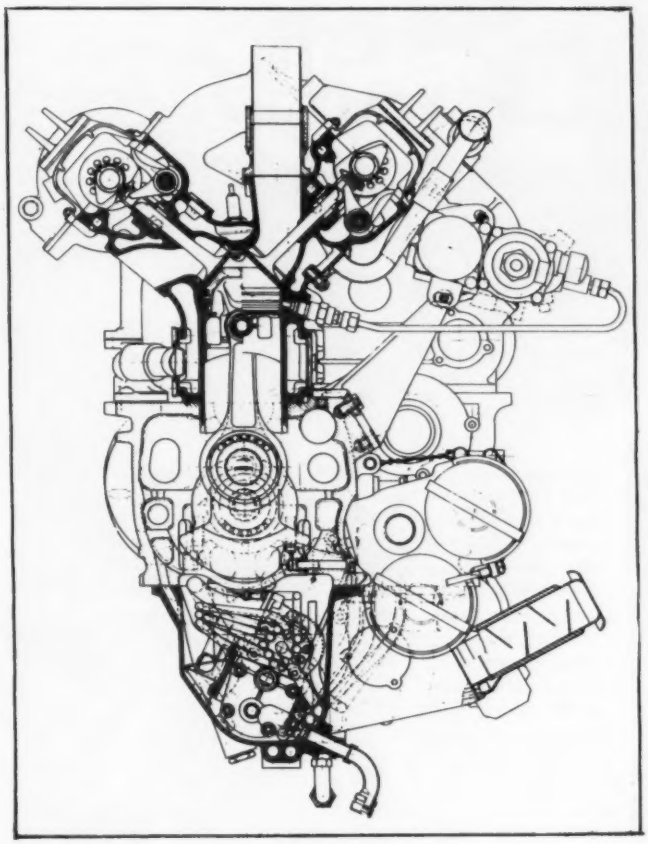
Now that Mercedes has been out of racing for a year and a half, they've seen fit to release reasonably complete drawings and photos of their equipment. It took a long world war and a team of British intelligence experts to get them to be as revealing about their prewar cars; times have indeed changed. Material like this makes news in the world's automotive press, and Daimler-Benz waited long enough to build suspense without losing impact. We could, like others, say that this dope is obsolescent, and is only turned loose because Mercedes has progressed farther, but we don't feel that that's the case. They're still experimenting like beavers with the M196 powerplant, trying to simplify and silence it as installed in their brace of SLR coupes. Many of these drawings date from April, 1956, and show very recent changes. It's a very live issue indeed, so here's your chance to match wits with the world's top design team.

Though in many respects the 196's seem wildly unconventional, Mercedes has always stolidly refused to employ any technique that wasn't thoroughly familiar to them. They can draw on experience with everything from power plants to fighter planes, and have plenty of time to test out new ideas thoroughly in the racing shop.

For this reason their well-tried welded cylinder block construction was resurrected again for the new racing engine. Totally unsuited to mass production, it nevertheless is reasonably light and gives perfect control of wall thicknesses. The two four-cylinder fabricated blocks were bolted to the cast crankcase by serrated nuts against a heavy flange at the bottom of the cylinders. Likewise, cast valve gear boxes had to be bolted to each head. This was not a totally rigid assembly, and the built-up blocks were very susceptible to vibration, so pressed alloy sheets were used to join the open ends of the valve gear vee (they're joined at the center by bridges over the cam drive housing;



Superb finish of M196 crank is strictly for go, not for show. Serrated joints of Hirth construction can be seen, as can central drive takeoff and twin vibration dampers.



Cross-section of latest S196 sports engine shows intricacy of cast block, solidity of crankcase. Access plate above exhaust valve guide could serve as water outlet for vertical mounting, or as intake for direct cooling jet. As installed, engine is canted sharply to left. This is worth much study.

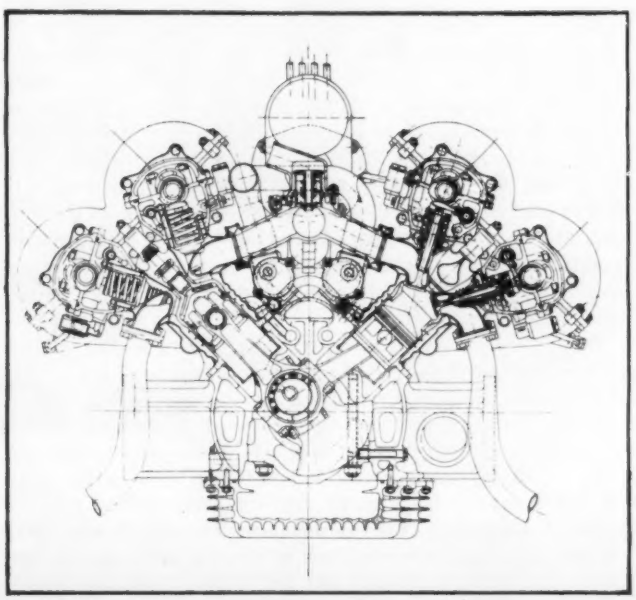
these have been both webbed and U-shaped in cross section). The welded rigs were good in small quantities and over the 300 mile G.P. distance, but the engineers were just waiting for a chance to put their now-proved new ideas in a modern cast framework.

The chance came after the '54 season, when larger numbers of 300SLR's had to be readied for long-distance sports car racing. A pair of very nice cast alloy blocks was designed, with integral camshaft housings and access plates on both sides of the cylinders. One plate is heavy sheet stock, while the other is fabricated of two thin layers which form a water intake manifold. These plates weaken the outer block walls somewhat, and are an indication that wet cylinder liners are not used. In fact, there are no dry liners either, the piston rings running directly on the alloy walls, which are probably chrome plated as in the Porsche. Ferrous inserts are used throughout the engine, for the plug and injector holes as well as for accessory attachments. The valve seat inserts are deep, but narrow to conserve space.

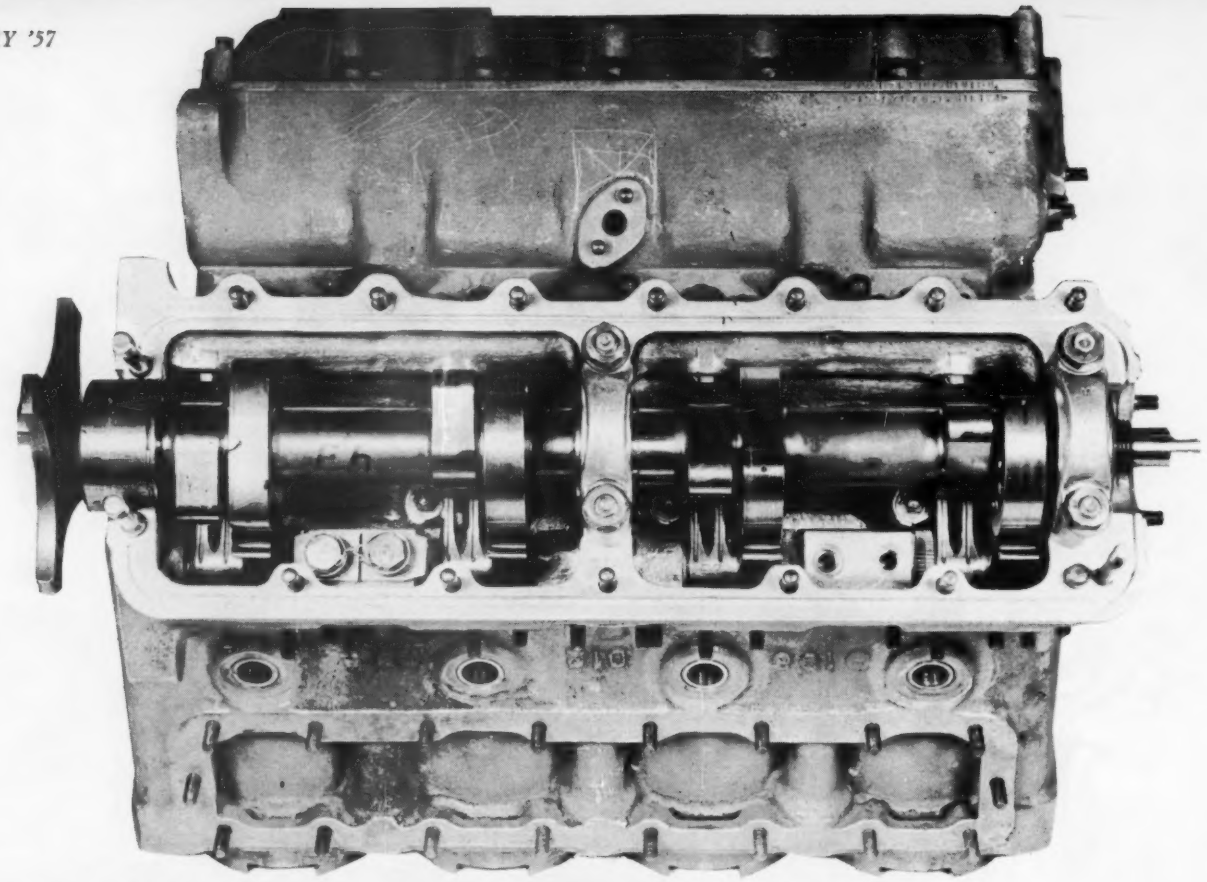
Cooling of the plugs, injection nozzles, and valve seats and guides is excellent, as always, thanks to the use of integral-head construction. The exhaust valve and port in particular are well cared for. They didn't hesitate to add access holes in the head if foundry core shifting could be absolutely prevented. As a result, there are water offtake ports in the intake side of the head, for inclined mounting, and additional ports high on the exhaust side if vertical mounting is ever needed.

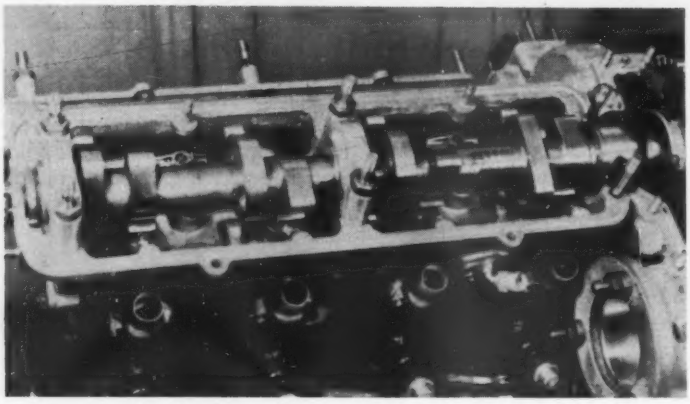
Instead of joining block and crankcase at a flange, and stressing the cylinder walls heavily, the ten studs for each block extend all the way from the very deep main bearing caps to the center of the vee between valves. Compact and deeply braced inside, the crankcase comes down just low enough to enclose the crankshaft entirely. The main caps are closely fitted on three sides, and have two lateral bolts each in addition to the studs mentioned above.

In the bearing department Mercedes also defied current practice, to make sure they knew what they were doing. Every other G.P. builder has found that the latest Vander-



Mercedes designers wanted to avoid construction, valve gear, and accessory drive complexity of pre-war vee-type layouts like this 1939 1½ liter V-8. This was a blown four-valver, with welded-up head and block.





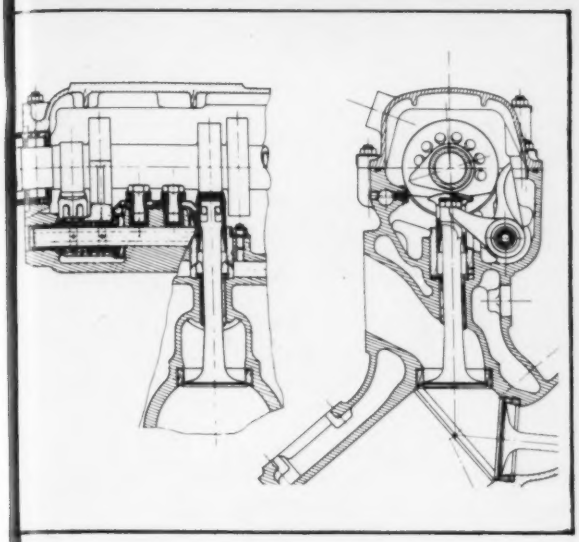
Above, for your minute inspection, is the rear block of four cylinders from the very latest three liter straight-eight. The holding clamps have been removed from the right-hand pair of valve adjusters, showing the serrations for locking the clearance. Also visible are lifting rockers and hold-down nuts for tappet guides. Compare shot of front block of 1954-type GP engine at left. Cams are wider spaced; rockers and shaft are at top instead of bottom, and block is fabricated instead of cast. Assembly at left is #8, above is #71! The design is NOT dead.

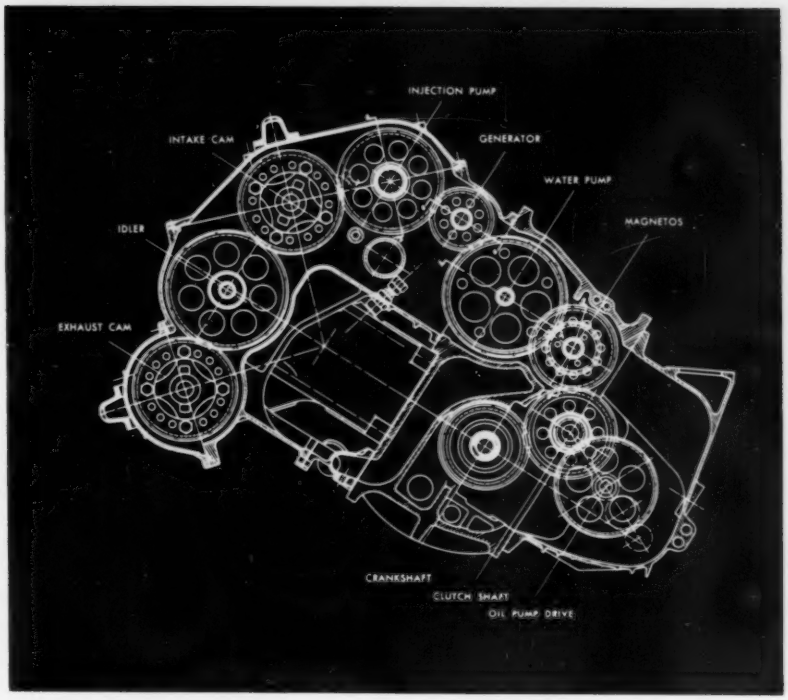
vell thin-wall bearings equal or exceed balls or rollers in efficiency, but all the prewar Mercs had used rollers throughout, so these were retained. Before the war they had a one-piece crankshaft, which required split duralumin cages. These had to be replaced frequently to avoid disintegration, and even then the designers wanted to switch to a built-up crank, as made then by Mahle for Auto-Union. More recently the Hirth crank rig has been perfected with the help of Porsche, and Mercedes chose this for their new engine. With this system the individual crank webs were joined by serrations in the center of each journal, which allows some choice in crank throw position and firing order. They've tried several sequences, the latest of which is illustrated here.

The crank is symmetrical about the central 33-tooth spur drive gear, and has a vibration damper at each end. Its finish makes it a thing of beauty, but the shapes are strictly functional. Lubrication to the mains is via a tubular gallery bolted to the bottoms of the main caps, and supplied by a pump running at 0.272 of engine speed. As the oil escapes from the sides of the main journals, and is flung out by crank rotation, it's caught by slinger rings in the webs which in turn feed the big end rollers. This arrangement avoids crank drilling, and is another design heritage.

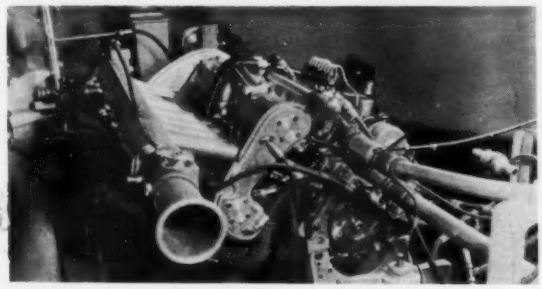
Each running directly on 44 rollers, the one-piece rods are fully finished and deeply webbed, having a conventional H section. They aren't drilled, so the needle roller wrist pin bearings are splash lubricated. The piston itself is of full skirt design, made by Mahle. Its crown is very heavy and well braced, and below it are four rings. The top two are widely spaced and just cover the injector aperture on the intake side. Third ring is a combination compression-scraper, while the fourth is a genuine vented oil ring.

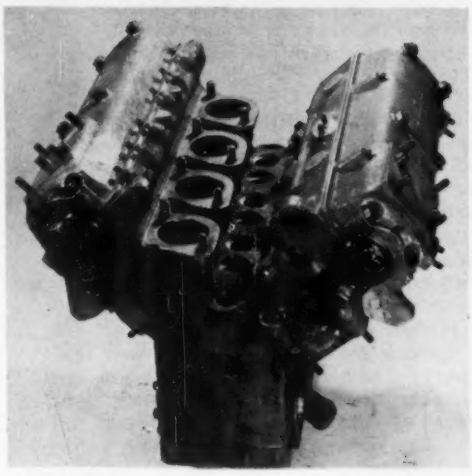
Back at the crank, the central gear drives a spur placed close to the parting line of crankcase and cast sump — this twirls a big tubular shaft to the flywheel and single-plate clutch, which run at 0.94 engine speed. A smaller pinion here drives the oil pumps, while the main gear drives the twin Bosch magnetos at engine speed. Again, a smaller gear on the magneto shaft turns the big water pump gear at 0.442 of crankshaft. This is the last pinion to be mounted on the crankcase, the rest being housed in a casting between the cylinder blocks. On the S196 (300SLR engine)





For reference from text, above is drawing of desmodromic valve gear, from two views. Eccentric sleeves under closing rocker, at left. Layout of cam and accessory drive is very clever, many details being shown at right. Upper five gears are in own case, with two removable covers.





Assembled 1955 GP engine on test bed above. Compare with early prototype SLR front block casting at left. Bolting to crankcase differs, as do most other construction fine points. Intake ports are large, plugs at angle.

Alloy cage locates rollers, which run direct on surface of crank and rod big-end. Construction of rod needs little comment. Very slight valve cutouts are needed on piston dome.

a small idler gear above the water pump runs the generator at a reasonable 0.857 of engine rpm. Next up, on the same parting line as the cover for the intake cam gear, is the half-speed drive for the injection pump. Then there's the intake cam gear, an idler, and the exhaust cam pinion. Except for that idler, every single gear does a job and does it as simply as possible. One of the major reasons for choosing a straight-eight was that its accessory drives are simpler than the comparable vee-type engine, and the designers have certainly driven this point home.

Each cam gear is bolted at four points to a spider on the rear cam. Two dogs on each front cam mate with holes in the spider, giving a margin of fore-and-aft flexibility. Each of the four cams runs in three bearings; the four of these next to the drive housing are retained directly by the camshaft cover. The other eight have separate caps.

Though some photos and rough descriptions have been released, the details of the Mercedes mechanically-closed-valve system have been strictly *verboten* until now. We're happy to present you with the assembly drawings on these pages. The reasons for this expedient have been raked over and over in the press, but to review: It allows practically free choice of valve opening and closing rates, with as big and heavy a valve as is necessary, and without the huge space requirement of adequate valve springs. As a result, gas flow is far better, and the combustion chamber shape can be refined, since big valve cutouts in the piston heads are no longer needed. Valves don't hang up if Uhlenhaut misses a shift — in short, it's worth it.

Opening the valve is done with a minimum of fuss. Slipped over the thick end of each heavy valve stem is a simple tappet, shaped on top like a rounded shoe. The opening cam, wide and conventional except for its extreme ramping, drives this tappet directly. Clearance is set by shims between stem and tappet.

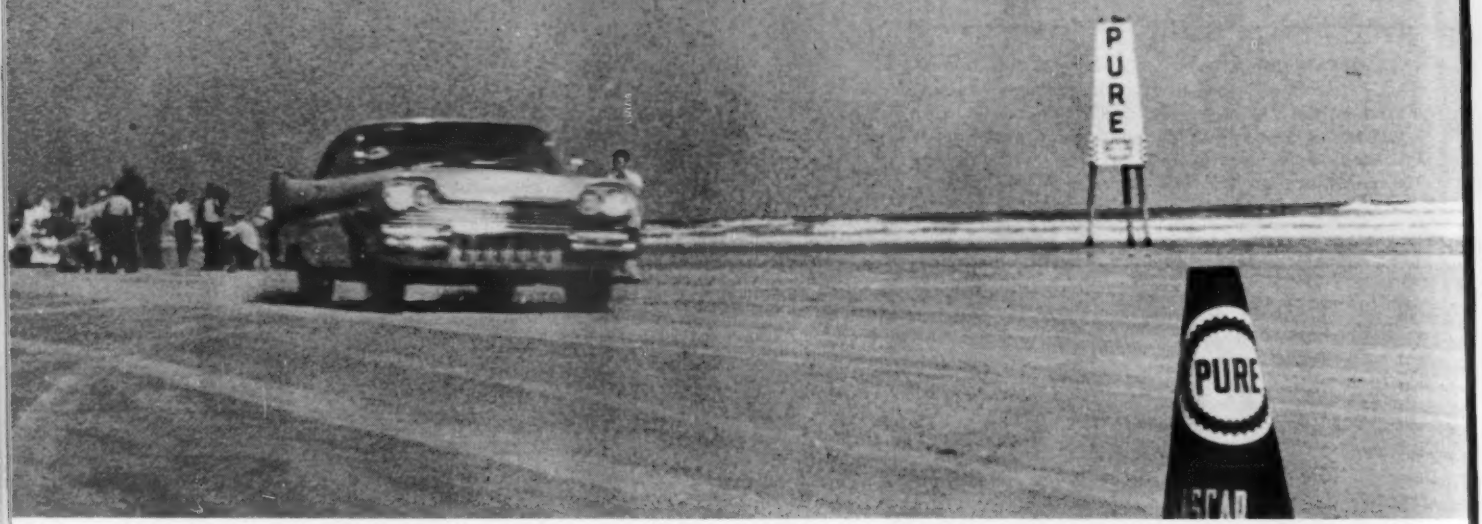
Adjacent to each opening cam is a closing cam lobe. This drives a bell-crank rocker, pivoted on a shaft running the length of each cam box. The finger of this rocker extends up to the cam, roughly parallel to the valve stem, while the working arm of the rocker is forked. These forks engage two notches in the sides of the valve stem, just below the top of the stem. The tappet is cut away to allow the fork to pass through to the stem, and in turn the fork

(Continued on page 60)

TO DAYTONA WITH THE FURY

SCI GOES RACING

By BILL CARROLL



Plymouth digs away from the starting line, marked by pylon standing at water's edge, on first day's run. Smaller NASCAR pylons were spaced one mile apart for entire length of beach course. Fury's gear ratios and rear suspension were ideal in providing maximum "dig" in packed sand. Some overpowered cars buried their wheels in ruts.

"YOU'VE a mile to roll, another through the traps, plus two miles to slow down," said the steward as he slapped the door panel in a friendly o.k. I zeroed the window closed. The starter stepped away, flipped his flag and I was off. Southbound on Daytona's famous racing beach.

Wheel-spin of previous cars had chopped the sand and my Fury did its share of digging deeper ruts. When chassis vibration died, the speedometer flipped past 40 and I stabbed the automatic transmission's "2" button. Full bore now. Both carburetors wide open, throatily gulping cool sea air to feed flying pistons. The engine peaked at 80 as the transmission shifted to direct. The whole car leaped forward as peak torque was thrown at the tires. At 100, it was quieter. Only a faint blur of sound left the engine to match blurred course markers spreading apart to let us scoot through.

A pylon on the left came closer, to sail out of view rearward as the car snapped over a black rubber snake opening the measured mile. The speedometer needle had lost itself behind the number panel. Who cared what it said. The course curved duneward to miss a dip. I didn't turn much, only enough to miss the marker by paint. A dip. I floated. Dipped. Floated. Dipped again. But still heading straight between the blurs. Where did the new pylon come from so quickly? "Snap". I had flipped the snake again. Out of the mile now. Wonder how fast I was going? "Ease off slowly". So I did.

Bumping along the safety road a visitor shouted, "It sounded like you did over a hundred". Then I relaxed and took a couple of deep breaths. This WAS Daytona.

Only ten days before, I had arrived in Detroit to take delivery of a new Fury. Out of Plymouth, by Chrysler. Even 18 degree weather couldn't cool my excitement as the snow covered car was brought in from open storage with electric wipers skittering over the windshield in a futile effort. Ten minutes later, hot water had melted the white blanket revealing the Fury's clean lines. My bags fitted the trunk space, signatures were attached to paperwork, pictures taken at the plant, then we headed for Daytona. It snowed and rained, while foggy mountain roads hampered every attempt at high speed driving. At that it was a quick, comfortable thousand miles with the Fury 318 dual quad engine providing 14.4 miles to each gallon of Pure premium gas.

Our arrival at Daytona was something less than earth shaking. Finding our way about town was a simple process of getting lost—then asking directions. Soon we located a heated swimming pool, with bedroom attached. Orientation completed, we began digging for information to ease the way of Sports Cars Illustrated readers who will visit Daytona next year.

All the speed shops and garages we poked the editorial nose into revealed two things. One; everyone was busier than a new groom and, two; there were loads of horses hidden under those factory "stock" hoods. Smokey Yunick, famed racing tuner, was shattering the concrete floor of his garage with full power dyno tests of a fuel injection Chevrolet. Ronnie Householder, Plymouth racing engineer, found time to make valuable suggestions for preparing our Fury — plus showing us through his garage of competition goodies. The Ford group was hidden, concentration camp style, behind wire fencing and armed guards; leaving us no choice but to move on to Chevrolet. They had established a service center with space for some 20 cars. Carburetor specialists, ignition experts and service mechanics were on hand to advise and assist Chevrolet owners without charge or obligation. Even Chevrolet parts were available at a substantial discount. No matter where we went, there was a car or cars in various stages of tuning activity.

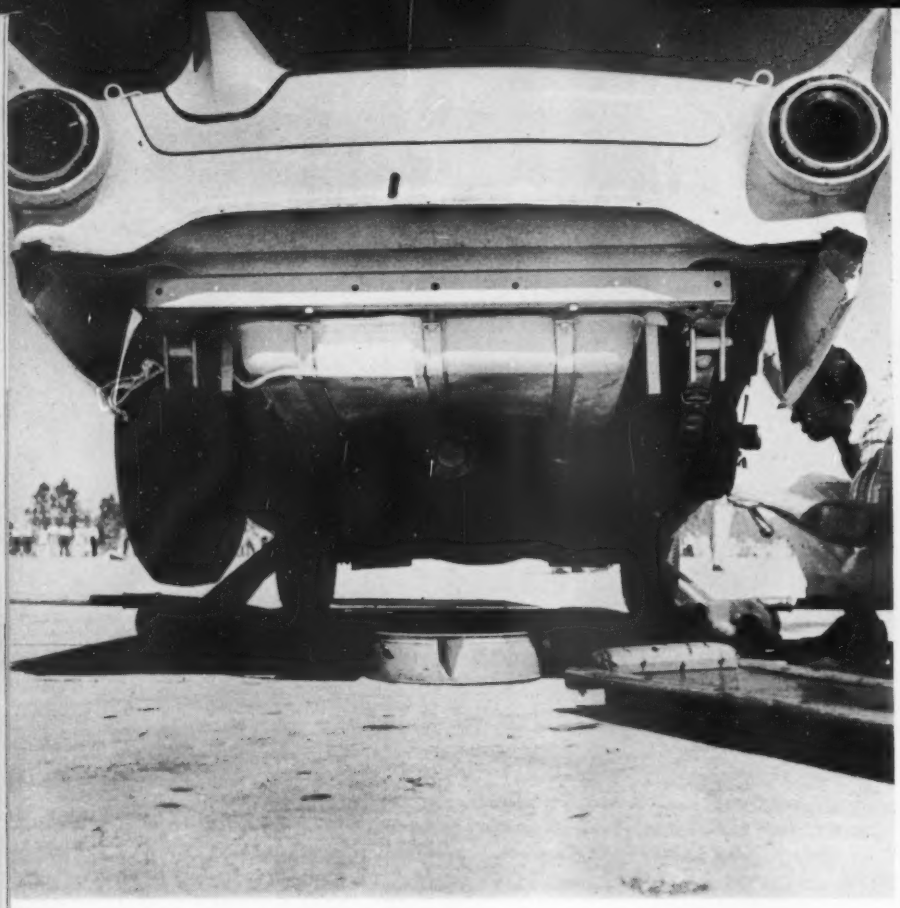
ABOVE: Author-driver and car shortly before leaving Detroit for Daytona. A few days later, Bill pushed the Fury to a record 124 plus mph. BELOW: Cardboard was taped over headlights and fenders to improve aerodynamics. A ten mph gain was added this way. NASCAR safety official paints eyeballs in place of lights to aid car's vision. After all, a car can't make a run blindfolded.

One owner, a Nebraska farmer, stole the rear end from his wife's new Ford, for use under his own blown convertible. Way back in another garage, the representative of a Lutheran ministerial publication was having his new Chrysler tuned for still another run at the measured mile.

Our Fury had performed well from Detroit to Daytona, but was definitely in need of an engine tune up. Bill Brumback, Auto-Lite ignition specialist, offered his services. Plugs were pulled, compression checked, and new plugs installed. No charge! We decided to set the Fury 10 degrees BTDC, while running on 99 octane Pure gasoline. Finally Pandora's electronic chest was hooked up and we took turns watching the oscilloscope's green pips count off the sparks. Later, Don Whitney, a Plymouth "service rep" reset the progressive linkage dual quad carburetors and suggested we contact Goodyear at the beach for tire data. With slugs cheerily churning under the hood we cruised backwoods highways for several hours checking out our now well broken in and retuned Fury engine.

Bright and early the next morning, two cups of steaming coffee had the eyeballs propped in place so we could find the inspection station and registration office located in a drive-in-theatre. There we had to display our NASCAR license, then exhibit, and part with $2 worth of green stuff.

On the ramp, a safety inspector was wiggling the steering wheel, while another counted the tires. Our running number was painted on the windshield and we were off for the beach. Here, all was seeming confusion, with cars scuttling all over the sand. About a quarter mile from the drive we could see the entrance, so dig-



While at Daytona, SCI Correspondent Carroll checked up on a few other goodies too. This race car, a Thunderbird in name only, won many laurels for Ford. Soon Bill and SCI will show you just how it was done.

Smyrna Beach airport races were new addition to speedweeks, and highlight was entry of red-hot T-Bird, at left, which finished second in very able field. No. 16 at right is Reventlow's Maser; see our test on page 12.

ging spurs to the wheel spin department, we added more traffic. There we were directed to a roped enclosure where a couple of husky boys were sweatily pumping gasoline out of each contestant's tank. It took a long time—but soon the Fury was empty, leaving just enough in the tank for navigation to the tank truck.

"Fill it", we told the nozzle man.

"What?", he queried. "Why do you want it full? Everyone else only wants a gallon or two."

"We're different, and besides the extra weight will give slightly more traction."

With muttered misgivings, he filled the tank. All 20 gallons of it. Next a NASCAR official applied masking tape to the fender cover and rubber stamped all over the place to prevent tampering. At least, if we couldn't use any special fuels, no one else would either.

A couple of hundred yards further down the beach, we added ourself to the long triple line of trial cars. Hub caps came off and were tossed in the trunk. The Goodyear man passed, was hailed, checked the tires, and returned later to fill them to 45 pounds. "Best for the beach," he said.

Around us, hoods were airborne as last minute adjustments were made, or already locked solidly down with layers of eddy-eliminating masking tape. Suddenly everyone had to make an impromptu Le Mans start run for the cars, sail down the beach and fall into line again. We didn't do so well, for it seemed there were twice as many cars as before. All in front of us. Finally the runs began. Three from one line, three from the other, then we moved forward. Tension increased with every driver. Windshields were cleaned 'til the glass was thin; last minute tape was applied to door handles, bumpers, even radio antennas. We moved forward again. Windows were closed, ventipanes set to bleed a little air to the vacuum around windshield edge, while blood pressure rose a notch or two.

We moved again. Now in the front row. Three cars from the left. It was getting darker. Perhaps they would cancel before reaching our row. The seat belt was fastened. Then checked. A car left the right lane. The seat belt was too loose. It was retightened. Another car moved out. Perspiration was wiped from hands. Cleaned off the steering wheel, redried hands. A third car left the right lane. Went to start the engine—but it was already idling. Funny, didn't remember starting it. A slap on the fender, "Turn on your lights," we were then next. An inspector checked gasoline seals, said to guide right as there was a deadly dip near the middle of the trap. Then we idled to the starting line.

A steward said to keep our eyes open (Who in the devil planned to close them?) and there were two miles of deceleration beach beyond the exit trap. Then he smiled and said, "Good luck".

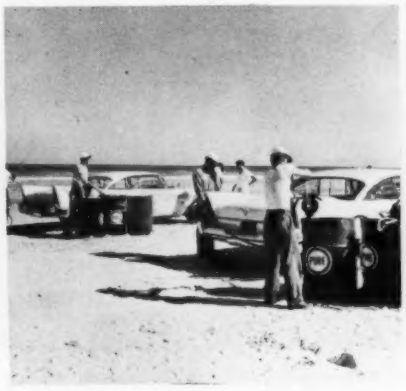
We felt better.

The control car's horn beeped twice, the starter queried for an OK, flipped his green flag—then the Fury and I were off for our first ride at Daytona. Wheels were churning the sand, markers becoming more blurred second by second, engine noise dropping rapidly behind as the beach flew by. Three poles on the left, buried in the ocean sand marked the entrance to the trap. I flew by. Speedometer at 110. Here comes the dip. We went light, wheels dropped, crested on the other side, the car elevatored our stomach for a moment. We were still true in the course. Speedometer 116. Timing snapped by on the right. Speedometer 118. We shut it off slowly, relaxing only when the far turn hove into view at 60 mph. Our time was a nominal 106.540. Not good enough!

Early the next day we cornered Ronnie Householder to promote the answers to better time. "Streamline it," he said. "Then go back and streamline the streamlining. Masking tape and cardboard can add 6 to 9 miles an hour when you are over the hundred mark."

Ten minutes later we hit a local paint store for masking tape and sheets of cardboard. Back at the parking lot the shirt was shed and a suntan began accumulating as the Fury's graceful lines were altered to a more aerodynamic contour. Headlights were covered and faired to the bumpers, which were taped to the body

Everywhere in Daytona, garages were scenes of feverish activity as drivers and mechanics struggled to get extra miles from cars. Here Plymouths are inspected by NASCAR officials to certify their stock condition.



At the Beach, each competing car was drained of fuel, then refilled with Pure gas to make sure all contestants ran with same octane fuel.

Service trucks from various manufacturers roamed up and down the line giving assistance to competitors with air, plug cleaning, etc.

Ronnie Householder, famous driver on Plymouth engineering staff, suggested use of cardboard and tape. Our coupe just clocked 116 mph.

and splash pan. A strip of cardboard, plus much tape, eliminated eddy points above the windshield and behind both rear quarter windows. Rear bumper wings were faired to the body and the right hand door was tightly sealed all around. This took time. So much, that we could only grab a hamburger and rush for the inspection station. Though it was late, they gave us a fast checkout, yet took time to paint a pair of eyes (Chinese steamboat style) on headlight covers of the now lightless Fury. Once in line on the beach, the hood was taped and a miniscule pennant attached to the radio antenna. But all to no avail. We (plus a hundred other drivers and cars) waited 'til darkness—but a combination of poor beach conditions and other delays ate up the daylight, cancelling the runs.

Both the sun and Carroll were up early the following morning. "Today we would be among the first in line". But we weren't. Some fellows must have stayed up all night, for there were 68 cars lined up on the beach when we arrived. We were No. 69. As before — we waited. Regrouped from three lines into two. Then the runs began. This time six cars from one line, six from our line. We moved forward fast. Someone said the beach was good. Finally at 6:15 the flag dropped and we were off again. This run seemed easier, quieter, smoother and faster. It was, too. Cardboard streamlining added almost 10 mph to the Fury and we were clocked at 116.54 mph.

Still not good enough, so we asked Plymouth to loan us their stick shift Fury for flying mile competition scheduled the following week. Twelve hours before race time they delivered the car. Little work had been done on it, other than checking out basic ignition and carburetion. With luck, and a good beach, the stick should be faster than the automatic.

It was mighty cold Tuesday morning at the inspection station where hot coffee made waiting in line (with 200 other drivers) a bearable necessity. At that, being early paid off, with No. 40 assigned to our run. Safety inspection, draining, refilling, sealing the gas tank and finding a place in line were repeats of previous days. But today it would be good — and fast. The

(Continued on page 64)

Eric Hauser charges through turn five at the tricky Paramount Ranch course in the Morgensen Buick Special, shown here in an earlier form sans "nostrils" in nose. The car has proved almost invincible on the tight Western courses for which it was built.

SCI Technical Report:

FIERCE BUT FRIENDLY

WHEN a home-built special holds the outright sports car record at four of Southern California's biggest drag strips, it calls for a look. When this same special makes Enzo's latest products look silly, not once, but twice at the Paramount road course, it's time to tell all who will listen about it.

The Morgensen has been around for quite awhile, but it has taken-mechanic Max Balchowsky, a big Buick V-8 engine and a driver come alive in the form of Eric Hauser to start this reign of terror for the imports. At the recent Pomona race, under the piloting of Hauser, it completely dominated the weekend's racing. This was in competition with the most famous drivers in the country on very expensive machinery.

Not exactly lovely to look at, the Morgensen has been built by the method most aptly described as the 'direct approach'.

The chassis is of tubes; the axles front and rear are solid and borrowed from Ford. The Buick engine is a '56 unit running, among other things, six "97" Strombergs. A four speed Jaguar gearbox supplies the ratios and the weight all-up is 2300 pounds.

Hauser and Balchowsky, contacted by SCI, proved cooperative at the suggestion of a test and it was decided that Paramount Ranch would make a good site.

Interestingly enough, the car was driven the twenty odd miles from downtown Los Angeles to the ranch without incident and after removal of the mufflers, was ready to race. The course (SCI Dec. '56) is about two miles in length, has plenty of corners and in a fast car the uphills and downhills come with bewildering rapidity. The Morgensen proved plenty fast.

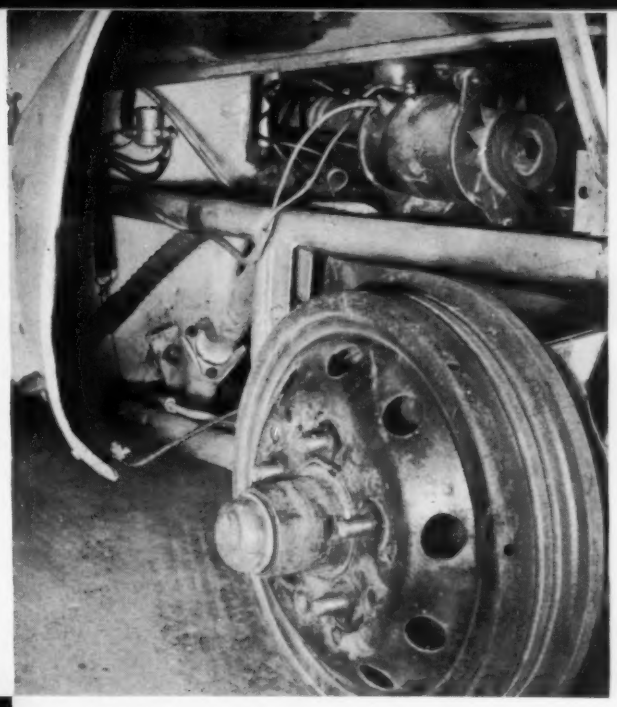
The cockpit is comfortable and a rather high seating position gives an excellent forward view. It turned out that although this position is welcome from the point of visibility, the driver is subjected to unpleasant wind buffeting at high speeds.

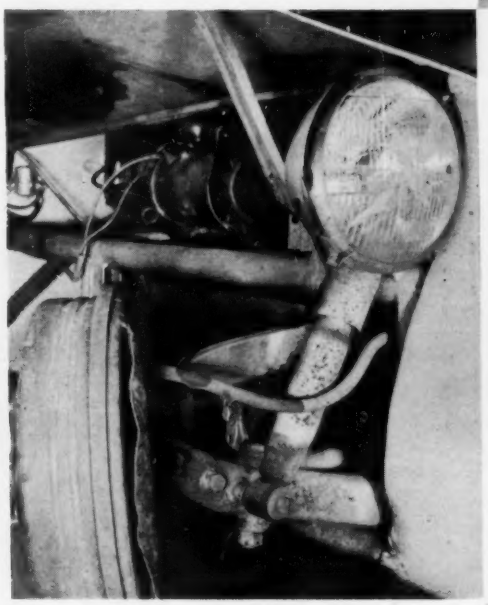
The gearbox lever is close at hand on the right and has a standard Jaguar bend. Further survey of the controls before starting disclosed, in addition to the normally positioned brake pedal, a clutch pedal with an unusually long throw and a button-shaped, oddly positioned foot throttle. The throttle, instead of following an arc on depression, travels straight forward and although it gave a strange feel at first, it was easy to become accustomed to and is perfectly smooth in operation.

Preliminaries over, a touch on the starter button and the warm engine fired easily to a smooth idle. Care has to be

The Morgensen Special, stuffed full of big bore Buick, is the hottest thing in Modified racing on the West Coast. Though sizzling, it's still as docile as a puppy.

By *RUSS KELLY*



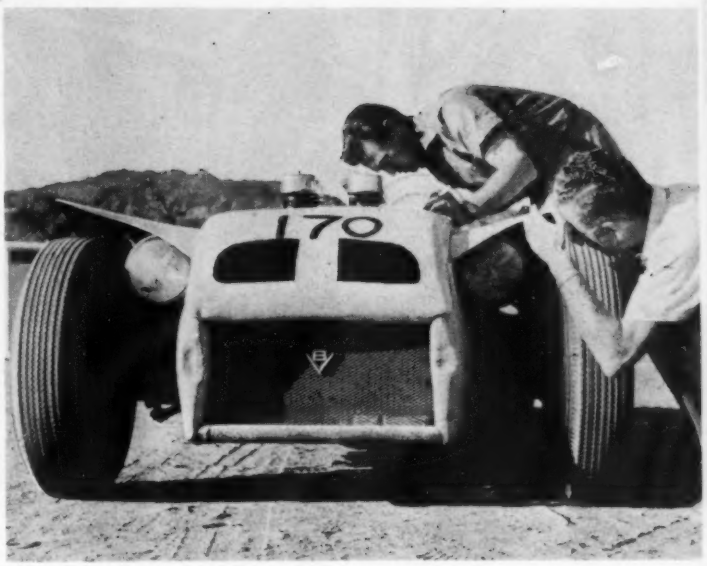


ABOVE: Big Lincoln brakes, with plenty of area and heavy stiffening rib at drum opening, are popular on Ford-based specials. These are vented both at drum face and backing plate. Very simple truss frame is visible, as is stock Buick generator. AT LEFT: Longitudinal "torsion bar" spring, fabricated from conventional leaf, is simple, works well. '40 Ford "60" axle is located by parallel leading arms, lateral Panhard rod. Shock absorber is 40/60 Gabriel; frame tubes of two inch diameter.

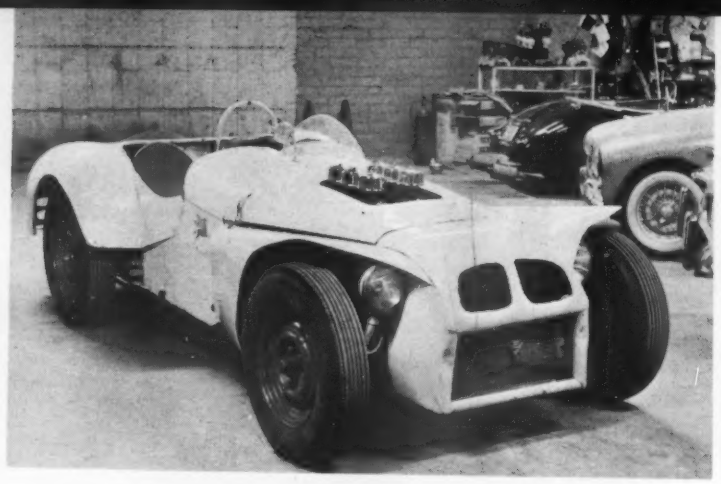
taken to avoid touching the throttle before starting because of the risk of drowning the engine with fuel from the six throttle pumps.

It would be impossible to describe a ride in the Morgensen without the capitalized and italicized word *Torque*. With a 4.10 final drive, first gear in the Jag box was all but useless, except to set the tires on fire. Second gear was used for all standing starts and wheel spin could be provoked at will at any rpm. After cautiously jockeying out onto the course and through the intermediate gears into fourth, I never found it necessary on this two mile winding course to reach back down for third.

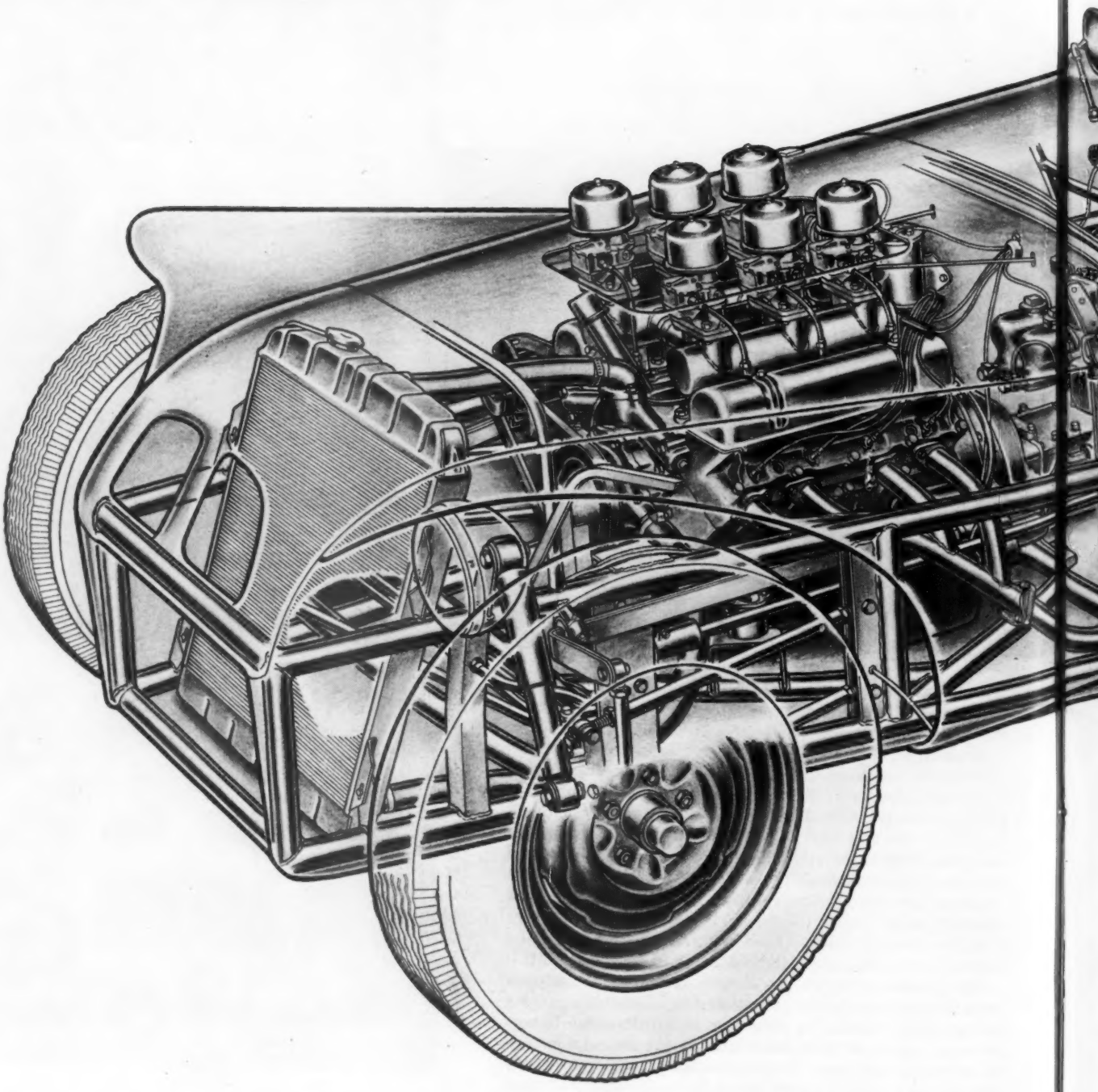
In the slowest corners, uphill or down, this big V-8 would respond in fourth to the slightest touch of the throttle. If it couldn't overcome the inertia immediately when you stepped right down on the throttle, it would spin its wheels supplying its own fluid clutch. The difference in lap times for Hauser in using fourth, or third and fourth, is one second a lap less by using the two gears. The impression gained from watching this car – that it is light on its feet – is confirmed when you drive it. If you stick it into a corner too fast with too much throttle and the back end starts around, all that's necessary is to correct, lift your foot a little and you're immedi-



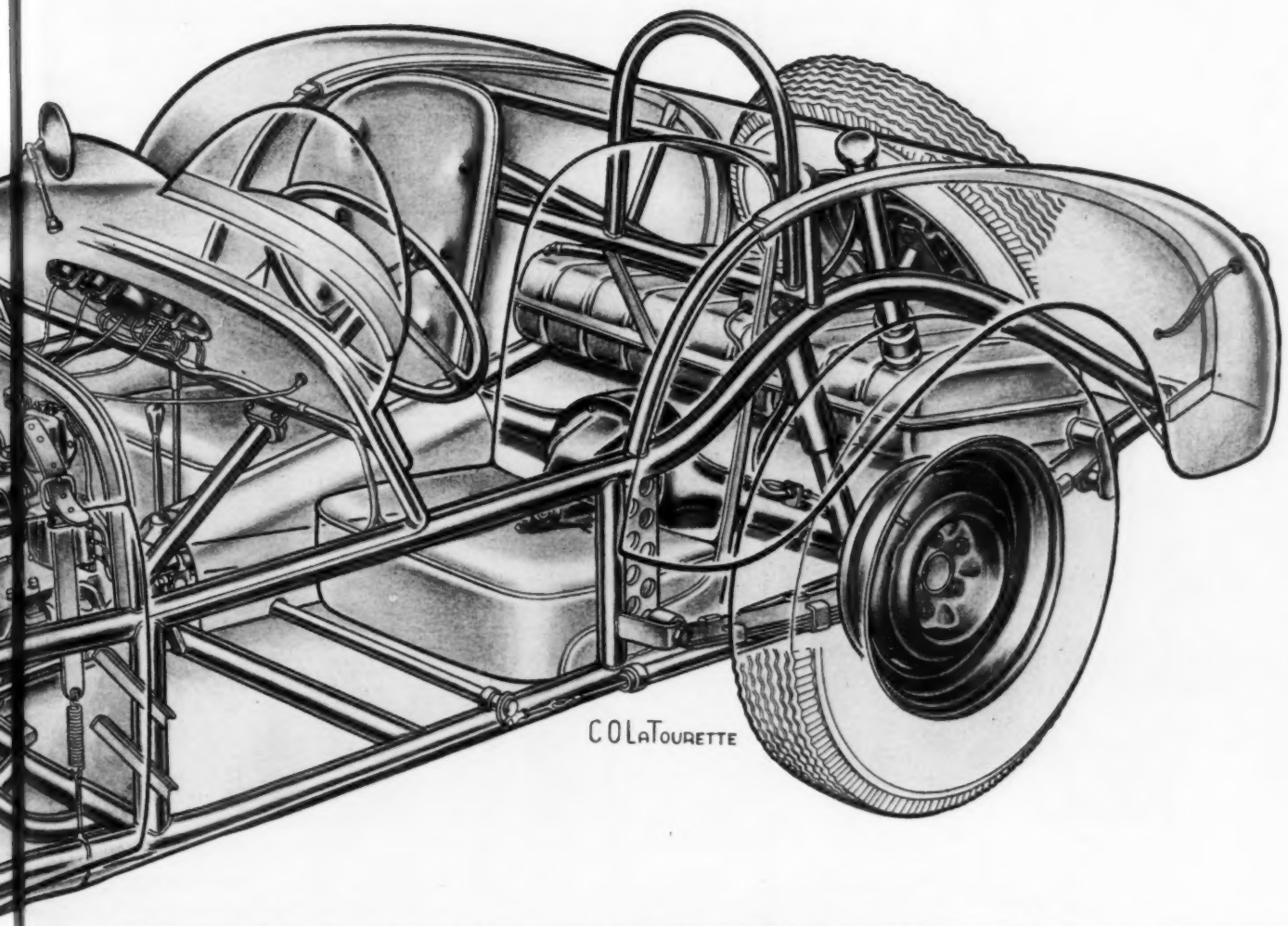
The Morgensen always surprises people, and they have to take a good look. Two citizens were about to whip out tape measure. Dents in front probably from pushing stalled truck.



MORGENSEN BUICK . .



. . so much torque you can throw the gear lever away.



MORGENSEN SPECIAL

ENGINE:

Cylinders	8 in V, 90 degrees	
Bore and stroke	4.125 x 3.2 ins.	
Capacity	342 cu. in.	
Firing Order	1, 2, 7, 8, 4, 5, 6, 3	
Compression ratio	9.25 to 1	
Output	300 bhp	
Valves	Intake	Exhaust
Head dia.	1.750 in.	1.250 in.
Stem dia.	.374 in.	.372 in.
Seat angle	45 degrees	
Clearance	.013 in.	.014 in.
Carburetion	six 97 Stromberg	
Ignition	Buick dual point, dual coil	
Breaker gap	.016 in.	
Timing	44 degrees BTDC	
Plugs	Bosch-240 P11	
Oil capacity	10 quarts	

CLUTCH:

10 inch Auburn

GEARBOX:

Jaguar XK 120, type JH

Ratios: 4th	1:1
3rd	1.36:1
2nd	1.98:1
1st	3.75:1
Oil Capacity	3 pints

REAR AXLE:

1950 Ford ..... Ratio: 4.10

WHEELS:

Ford 15 inch steel

TIRES:

Firestone
Size: 6.50 x 15 front
8.00 x 15 rear

BRAKES:

1951 Lincoln	Lockheed Hydraulics
Drum diameter	12 inches
Shoe width	2.250 inches

STEERING:

'40 Ford pickup steering box
Turns lock to lock 1½

SUSPENSION:

Torsion bars front, semi-elliptics rear.
Shock absorbers ..... Gabriel Tubulars

CHASSIS:

Wheelbase	95 inches
Front track	56 inches
Rear track	55.5 inches

ately forgiven. It has to be seriously provoked before it will push its front wheels, but if it does, you lift your foot and wait it out because you feel that conditions will get better, not worse.

Although the handling and performance of this or any other car is always open to debate, one fact about the Morgensen is incontestable . . . it's fast and fun to drive. Non-temperamental, forgiving and almost unbreakable, the brute showed only one fault during the test. At speeds approaching 100 mph down the straight, the front end showed a slight tendency to 'hunt'. This tendency for the car to steer itself was negligible and suggested either slight front end misalignment or gyroscopic kick from the not-too-light front wheels and tires.

Chassis

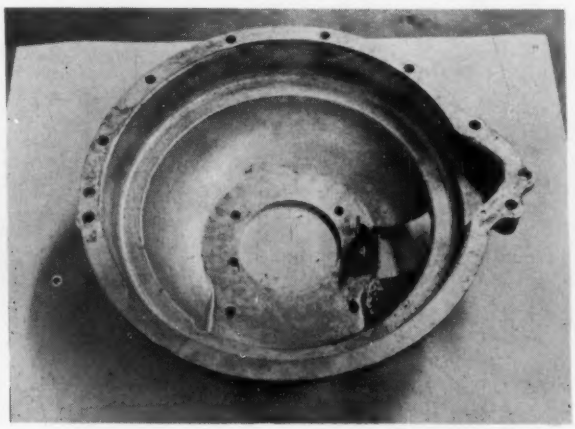
The tubular chassis frame is a non-complex truss type that takes advantage of the simplicity of the solid axle front suspension. In general layout the lower tube of each side member passes straight back from the front of the radiator to the tail. The upper side member tubes also start in front of the radiator and pass back on a level plane to just aft of the cockpit, where they then kick up to clear the gas tank. These side members are tied together front and rear by cross members of the same diameter tubing. Undeniably strong in beam, this layout is also extremely rigid in torsion, partly by virtue of its depth and partly by virtue of the materials used. Fabricated of two inch diameter .125 wall chrome-moly tubing, little consideration was given to saving weight. The bare frame weighs in at 140 pounds.

Front Suspension

The solid axle front suspension is basically Ford, although the builders replaced a lot of Henry's iron with original ideas and chrome-moly steel tubing. The front axle is the 1940 V-8 60 tubular unit fitted with 1948 Ford pickup spindles. The standard '40 Ford pickup steering linkage layout of transverse drag link and tie-rod is used but chrome-moly tubing and Heim aircraft joints have been substituted for stock parts. A '40 Ford pickup supplied the steering box, and in conjunction with a Ross pitman arm from a White truck gives a steering ratio of 1½ turns from lock to lock. Transverse location of the axle is obtained by a long track rod that attaches to the axle on the extreme left and to a cross member tube on the right. Fore and aft location is accomplished by two short parallel radius rods on each side. The paired radius rods are attached to the axle by a vertical bracket. This very effectively prevents the axle from winding up under braking stresses and since the rods are adjustable, front wheel caster can be quickly altered or corrected.

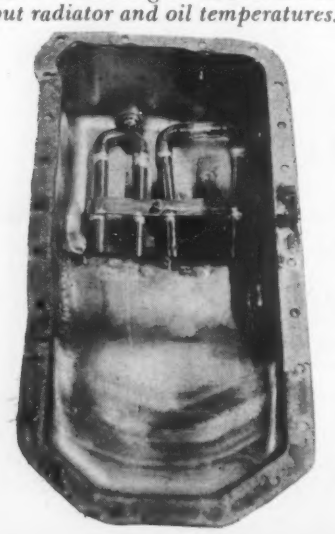
Front axle damping is controlled by two 40/60 Gabriel telescopics that are disposed at an angle of about 30 degrees inboard from the vertical.

Carburetion on 342 c.i. Buick is by six Stromberg 97's on Crower manifolds. Ignition is Harman-Collins Buick unit.



Jaguar gearbox was adapted to big Buick engine by means of commercially available Cook adapter. Jag box takes the torque easily.

Pan has been enlarged and fitted with water-circulating tubes that act to even out radiator and oil temperatures.



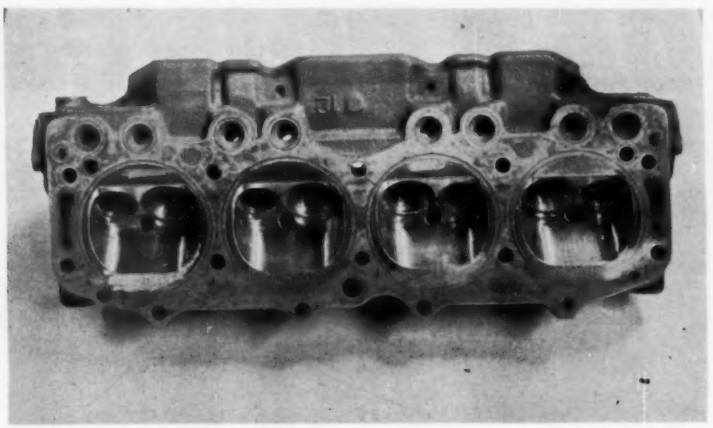
Just when this begins to look like a conventional, even conservative, front end layout, up jumps the devil.

The suspension medium is laminated torsion bars fabricated of leaf springs. Novel but basically sound in concept, this idea has worked out very well in practice. Two units are used, one to each side, and are made up of 32-inch lengths of 1940 Ford front springs.

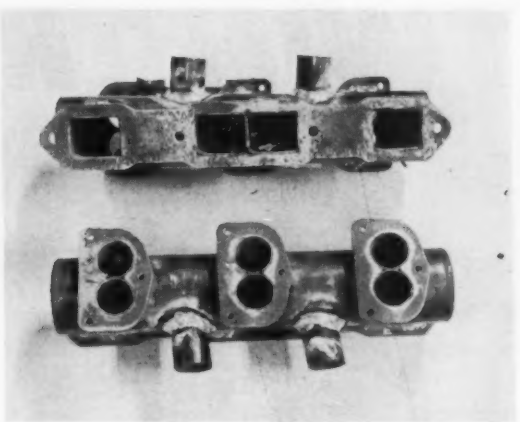
The spring eye has been removed from the 'small' end of the spring portion and a 90 degree bend made 8 inches back. The greater part of this angle extends to the rear along the upper frame tube, is attached to the tube, and acts as the torsion bar. The shorter length lies parallel to and slightly above the axle, is attached to it by a link and forms the torsion lever.

The length of spring that is in torsion is anchored solidly to the upper chassis tube at its back end by a bracket made

Frontal aspect may lack the esoteric qualities of the European coachwork, but it gets the job done. "Nostrils" were cut to increase cooling.



Heads used are '56 units, which, used with Jahns pistons, give a 9.25/1 compression ratio. Chambers and ports were cleaned but not gouged.



Intake manifolds were made from Crower kits. Despite lack of routing, give good response all through range.

from a Ford connecting rod. The forward end of the length in torsion is carried in a bronze bearing supported by a bracket also made from a Ford connecting rod. The lever end of the spring is connected to the axle by means of a short adjustable rod fitted on each end with Heim joints. A forged bolt passing through the axle is used as the attachment point.

Apparently, the eight-inch-long lever section with approximately three times this length in torsion has never called for alteration. Even with the elaborate precautions taken to ensure lateral and fore-and-aft location of the axle, it seems a much simpler answer to a complex problem than some.

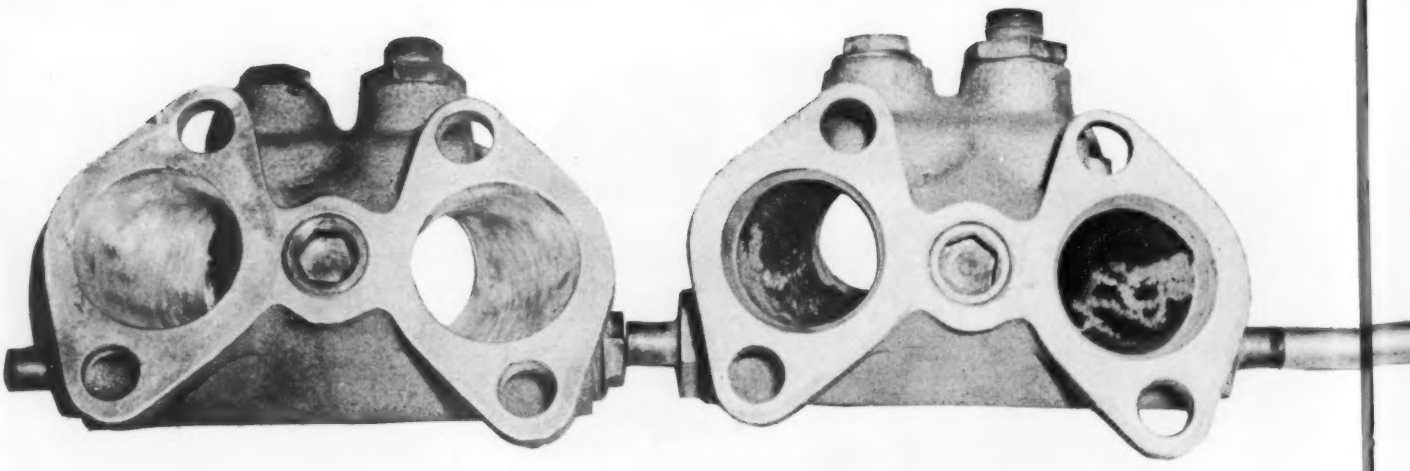
Rear Suspension

The rear suspension also leans heavily on Henry's parts bin, but modifications have been freely made. A '50 Ford rear axle with open drive shaft and semi-elliptic stock springs are the main components. The spring pads were moved out as near as possible to the backing plates, thus gaining a wider spring base. The springs are mounted conventionally to the chassis at their forward end. In the rear, however, the lower shackle bolts have been replaced by a solid steel bar that extends all the way across the chassis. This method of linking the springs so that action on one spring produces an immediate reaction on the other eliminates the need of a stabilizer bar. Rear axle torque is controlled by a short radius rod on the right side attached to a bracket that extends downward from the rear axle housing. It passes forward in an almost horizontal plane and anchors to a bracket on the lower side member tube. Final drive ratio is 4.10 to one, and the differential is locked by the simple method of welding it up solid.

Brakes

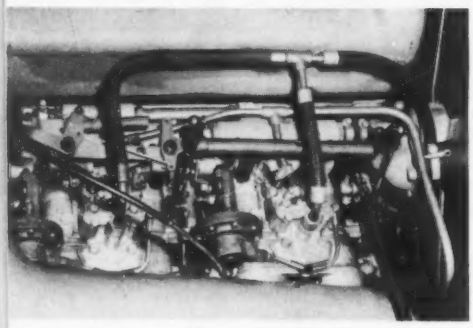
Braking is supplied by '51 Lincoln units that bolt right on the Ford front spindles and the rear axle. These hydraulic units are the favorites of the special builders who use Ford suspension parts. Their advantage comes partly from their

(Continued on page 60)

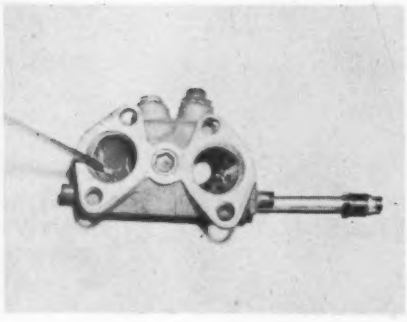


1 The stock casting on the right as issued by the factory is rough inside impairing performance of Mercedes 190 SL. Cleaning and polishing carbs (left) results in improved idling, acceleration and top speed.

TWIN THROAT POWER



2 When these two Solex carbs are working properly the engine idles easily at 1200 rpm, accelerates smoothly, and delivers highly increased top speed.



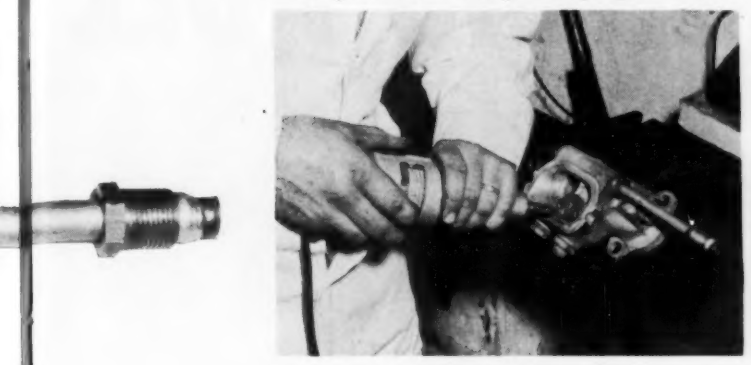
3 Screwdriver points out ¼" high flaw which acts as an obstacle to the flow of air through the carb throat. Other barrel bears clean-up tool marks.

4 High speed rotary file was used to grind away the excess metal in the castings—giving a streamlined, smooth flow. Care is taken not to alter throat.

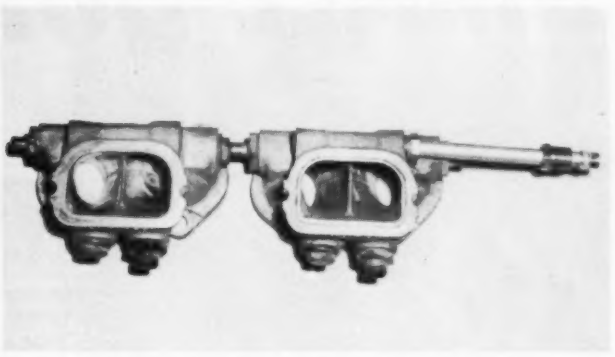
SUBNORMAL idling, acceleration and top speed of the 190 SL Mercedes can often be traced to the big pair of Solex carbs that live "up front" in the engine compartment. Like the well designed engine, the carbs offer the ultimate in performance if they are set up in the manner the engineers had in mind when the units were on the drawing board. Factory production seems to be the same whether cars, or their accessories, are made in Detroit, Coventry or Stuttgart. It gives the buyer the most for his money, but not without sacrificing the finer work done by hand on prototype machines.

The production castings used by Solex are often rough inside, and, though machined for a perfect mating to the intake ports, they present a not-so-smooth surface to the flow of mixture. Bob Newcomb and Kenny Meis of Six Point Auto Electric in Portland, Oregon knew from past experience with other induction systems that the rough interior of the manifold, was not going to add up to performance. To prove their point they took the carburetors from a misbehaving 190 SL and with the owner's blessing proceeded to refine them. The surface imperfections in the manifold throats were ground away with a high speed

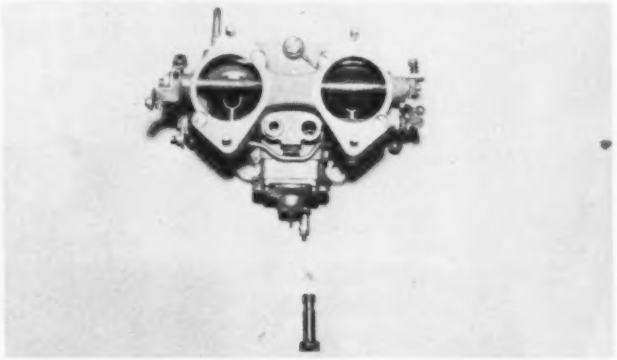
5 *Steel wool is used to remove the tool marks made by high speed rotary file in the clean-up process. It also gives the castings a high polish.*



6 *Casting on left has been cleaned out to gasket line shown on stock unit at right. Shoulder in divider web between primary and secondary throats has been smoothed down so fuel will enter inside ports without interference.*



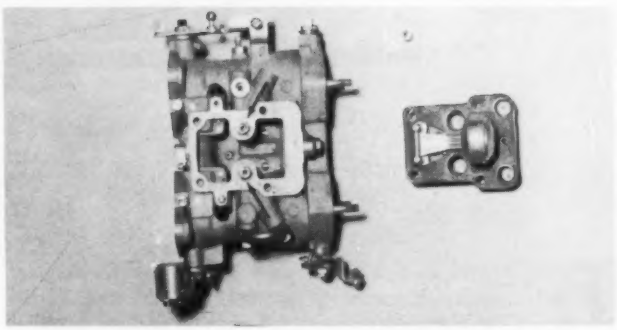
7 *Main jets are removed from center of casting and then reamed down to .0135 from their original .0125 size. Shaft across throats carries choke valve for right hand orifice only; must cross left throat to convert to linkage.*



Your Jag or TR3 would breathe easier through these Solexes, here being tuned for a 190SL.

By PETER SUKALAC

8 *Standard drills in proper size were used to enlarge jets. Drill itself is held solidly in a pin vice and the jet is twisted, not drilled. Increases are made in small steps of one drill-size at a time to prevent gouging jets.*



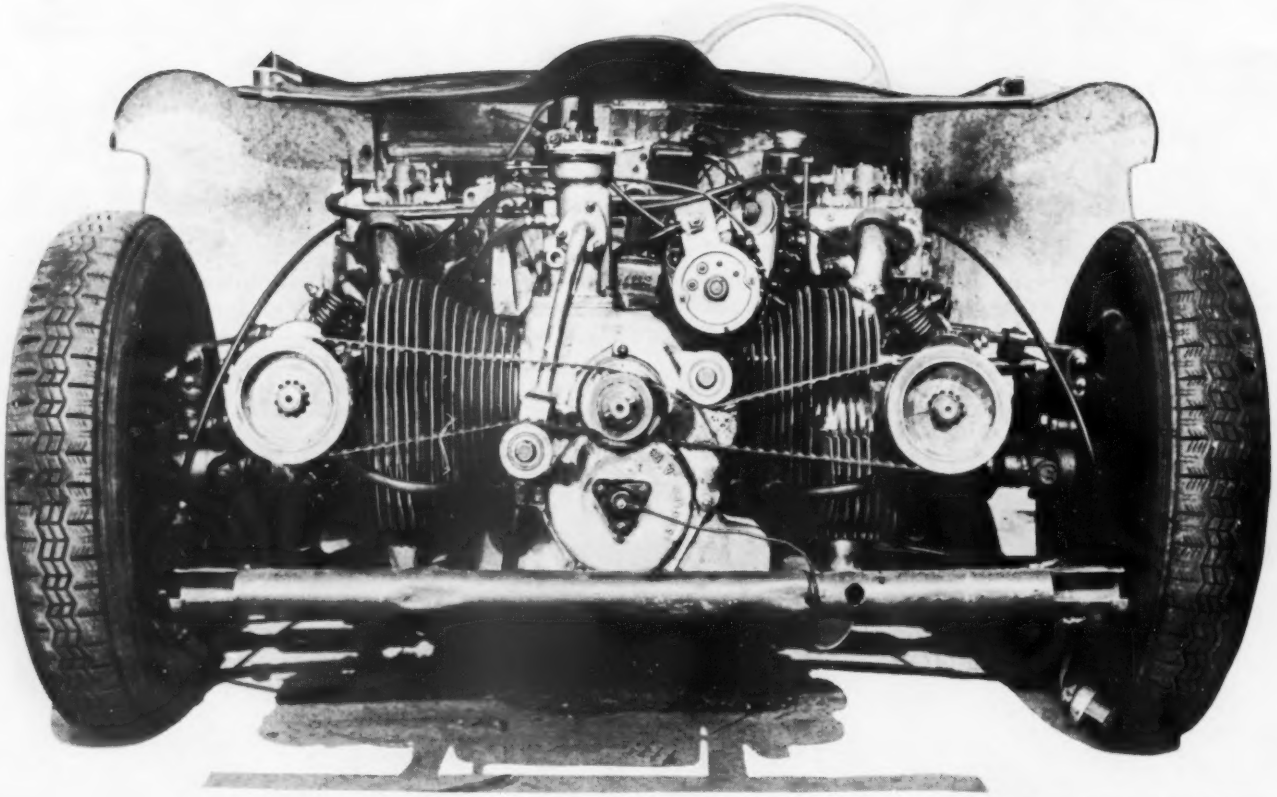
9 *The two air correction jets (arrows) in top of carb body were enlarged by replacement to 180 size. Jets are set into hex sleeves so that they can be readily removed without danger of scoring or damage by screwdriver.*

rotary file. The same file was used to open up the throats to the diameter established by the factory machinists when they cleaned out the end of the ports. When the throats were clean the metal was smoothed with a high speed stone and then finished with steel wool.

Before reassembling the carbs the jets were all checked for proper size. It was found necessary to increase the openings in the air correction jets to 180's. The mains were then drilled out from their .0125 size to .0135. The floats were set at the recommended $1\frac{17}{32}$ inches.

After reinstallation, the car was put through its paces. First off we were able to bring the idle down to a smooth 1200 rpm, whereas the best we could get before was loping 1500. Jumping off dead stop was easier even during floor-boarded acceleration. The revs climbed without hesitation, and the flat spots so markedly noticeable at 30-50 and 50-70 when passing, were no longer detectable. Our acceleration time from zero to sixty improved from 13 seconds to 10 seconds, and this is pretty darn good for such a small modification. Try it! #

SMALL BORE - BIG PULL



Front end packed with goods, including remarkable notched-belt drive for Norton cams. Cooling by forced draft only.

By OCEE RITCH

THIS is not so much the story of an unorthodox car as it is the chronicle of an unorthodox man. If the car is an interesting piece of machinery, its builder, a gentleman who has spent some $75,000 on a dream, is even more noteworthy. Without his willingness to gamble on an idea and a determination which amounts to stubbornness, it is highly unlikely that the automobile which may be the prototype of a future breed would ever have come into being.

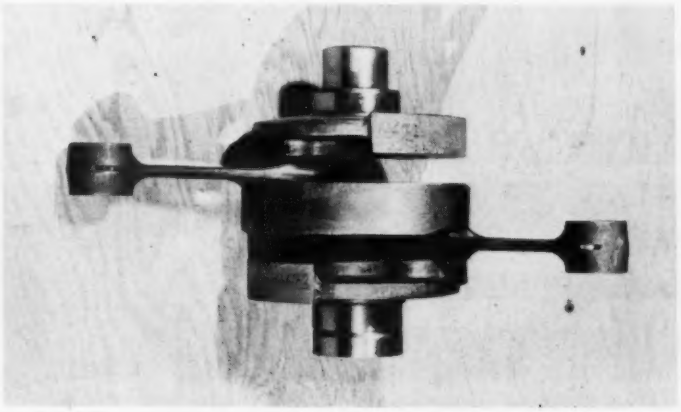
All these things could well be said of every automotive pioneer, it is true, but these are not pioneering days and innovations are not everyday occurrences. To qualify our subject (the car) as unique, let us depose that our other subject (the man) has wedded auto and cycle parts in a powerplant weighing around 135 pounds which develops nearly 80 HP from 750cc (44 cubic inches) . . . roughly the equivalent in displacement to *one cylinder* of a Chrysler. Furthermore he has mounted this screamer in a superlight chassis surrounded by a 75 pound body and the resultant bomb regularly finishes far ahead of many rivals one and two classes higher.

The man's name is Bill Devin, the car is the newest Devin Panhard and the 75 G dream is to produce duplicates for sale to the public.

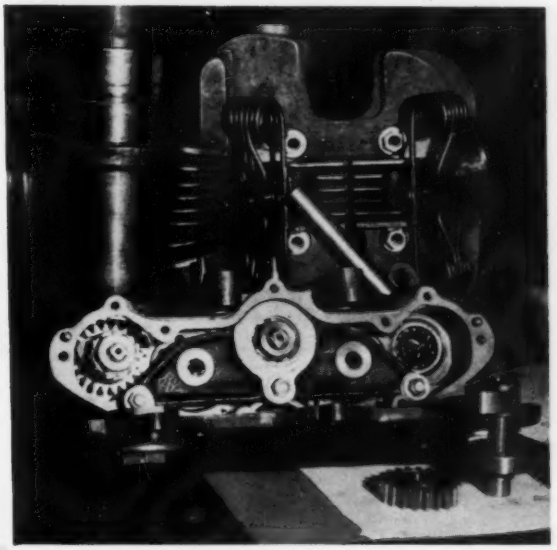
Few of our readers, unfortunately, have had the opportunity to drive a Ferrari. To many who have, this represents the ultimate in go-for-fun machines. To put it succinctly: when you push on the Loud Pedal in a Ferrari something happens and when you turn the wheel it turns. No nonsense, no arguments, or tricks; just stab it and steer it. Once bitten by the Ferrari bug, you've had it. But, at 12 thousand dollars, loosely speaking, how many can afford to have it? This is the feeling which courses through Bill Devin's nervous system and the idea which drives him to make it possible for anyone who has two or three thousand dollars to own a Ferrari. Not a prancing horse from Modena, true, but a tiny duplicate which will give that same feeling in the pit of the stomach when you turn on the pressure.

Devin is a refugee from the Detroit Iron business who made a fair sized fortune vending Chrysler products in his own agency. After the sports car movement began to grow

Bill Devin is a man who believes in getting lots of power out of small engines. Here's the latest Devin-Panhard, a sudsy mix of cycle and car.



Clean cut but not polished, sturdy crank is pressed together to allow one-piece rods and roller bearings throughout. More cycle than car in character, this goes well with Norton.

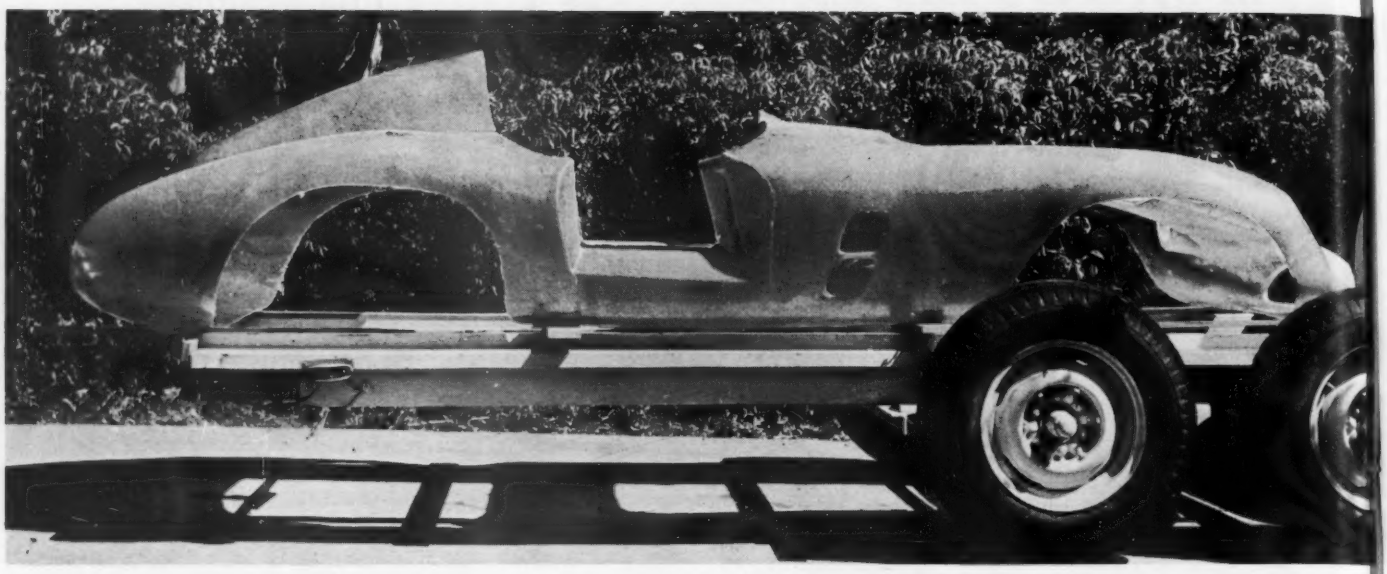


ABOVE: Now being reworked for latest Devin Panhard are "double-knocker" Norton heads. Simplification will cut out nine gears, many ball bearings. AT LEFT: Potent team of D-P's includes (L to R) Bill Devin, Jim Orr and Jean P. Kunstle. Not pretty but light and low, their record includes 41 class wins. BELOW: Cam shape and lift pattern remain constant, but relation of cam to cam and to crankshaft can be set to change opening points and overlap.

from a trickle into a streamlet he joined in the fun and games with a Crosley Special, built in his own shop, and competed quite successfully. This was back in the early 1950's when things weren't too well publicized, but many will remember the races at Walnut Creek, California, where Devin won the Under 1500 cc event and placed fifth in the main behind Jack McAfee (in Tony Parravano's Jag), Ed Cannon and Bill Stroppe who, needless to say, were wheeling potent big cars.

A feature on the Crosley, which won 20 races and failed to finish only twice, was the use of a scavenging exhaust system of "tuned" headers only now coming into widespread use.

These Crosley outings gave Bro. Devin a taste for bigger and fiercer action and, deciding that only the best would be good enough, he bought Phil Hill's Mexican Road Race Ferrari . . . a 2.6 liter coupe. After bringing the car back from El Paso Bill drove it to a third overall at Palm Springs behind Jack McAfee (4.1 Ferrari) and Howard Wheeler (2.6 Ferrari roadster). Not a bad showing for the relatively heavy coupe.



Clean Ermini-inspired body is current mainstay of Devin line, may eventually cover entire US-built car. It's available in kit form, for touring or competition, finished or rough.

The 2.6 was the first of an imposing succession of such automobiles which have been garaged at the Devin manse. A 4.1 Coupe driven at Le Mans by Simon, the ex-Rubirosa 12 cylinder 2 liter, and a 3 liter Farina Coupe head the list of uncle Enzo's merchandise. Uncounted are the ones ordered to run at Le Mans in 1953 which were not completed in time for the race. While in Italy, Devin made arrangements to import the Siata V8's into this country but lack of sales soon punched a hole in the project.

Other marques of which he has owned one or more specimens are enough to make a car fan drool, including OSCA, Arnolt Bristol, Porsche, Jaguar, MG, Citroën, Cord and Panhard. Notice please that the last three named have one thing in common: FWD.

A few years ago anyone who spoke out in favor of front wheel drive was regarded as an eccentric. Not so today, though, and Devin is in the forefront of those preaching the pull-instead-of-push sermon. It's not the purpose of this article to enter into the front-vs.-rear drive controversy, but merely to point out the performance characteristics observed in Devin Panhards which happen to be FWD. Observation: They go! And suffice it to say that the front-drive conception fits in perfectly with the plans of this man who says he wants to build cars with "lots of go for the dough."

Having established himself as a first class car nut, Bill was bitten by the virus which has infected so many in the post-war years. Unable to find exactly the car which suited him at a price he considered reasonable to the average man he decided to build one and, with the natural instincts of a dealer, to offer reproductions for sale to all comers.

This is, of course, a dark and dangerous road strewn with the carcasses of those with similar intentions. The Skorpion, Cheetah, Cunningham, Excalibur and Glaspar are a few American attempts which might be mentioned. Whether the Devin will join the roster of GM, Ford and Chrysler or will be listed along with the Bessemer, Croxton-Keating and Lutz Steamer in oblivion is being decided as you read this.

Seeing in the French Panhard a compact, well engineered small car which might furnish factory produced components for a special, Devin acquired a wrecked sedan and disassembled it completely. Here is what he found: A two cylinder, air cooled 850cc engine with interchangeable sleeves to reduce it to 745cc (Racing Class H), rated at 45 and 40 HP for the respective displacements. "Sturdiness" would be a simple description of the mill, which uses one-piece castings wherever possible. The sump and crankcase unit, for example, as well as the cylinders and integral head, are one piece. No gaskets are used between cylinders and case, incidentally, and compression ratio can be varied by using copper gaskets or turning a few thousandths off the barrels. Aluminum alloy pushrods actuate valves inclined at 45 degrees and closed by torsion bars rather than coil springs.

One-piece connecting rods, sort of the ultimate in sturdiness, are assembled with the full roller bearing crank which is press-fitted. Roller bearing mains of approximately 3½ inch diameter support the short (4½ inches between centers) crank. Unless run absolutely dry, the odds against such a bottom end coming unglued are quite high. Oil is low-pressured out of a dry sump throughout the engine, including the needle-bearing-mounted rocker arms.

Power from the sturdy twin is delivered through a single plate 7-inch dry clutch to a "rear end" and gearbox unit weighing only 45 pounds complete with grease! A one-piece aluminum housing surrounds the four speed transmision and differential. Unusual, besides the extremely low weight, is the fact that the transmission is cable-operated and has synchromesh only on second and third gears. Being front wheel drive, the whole ball of wax is mounted in a unit between upper and lower transverse springs. Independent axle halves depend on a total of six universal joints for constant velocity drive. Such U-joints have been blamed for the downfall of Cord and others, but in combination with the factory-set front end alignment, which cannot be changed without altering spring length, this application has proven trouble-free for many years.

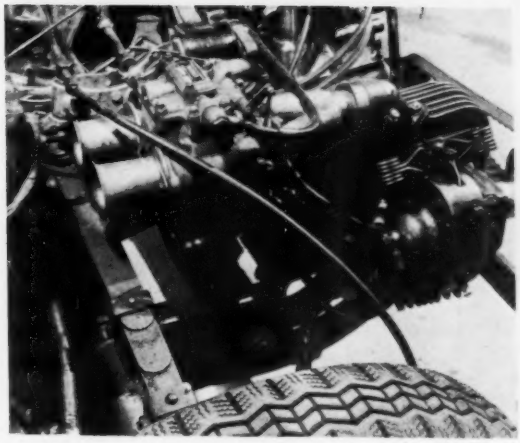
Adjustable Houdaille shocks control bounce and rebound on both front and rear . . . a semi-independent "V" axle arrangement. Torsion bars support the trailing vee tube and are splined for adjustment to half a degree. Brakes are Lockheed hydraulic with 10 inch drums front and 7 inch rear. Rack and pinion gives 2½ turn steering and a 27 foot turning circle.

Other dimensions include a normal 83¾-inch wheelbase,

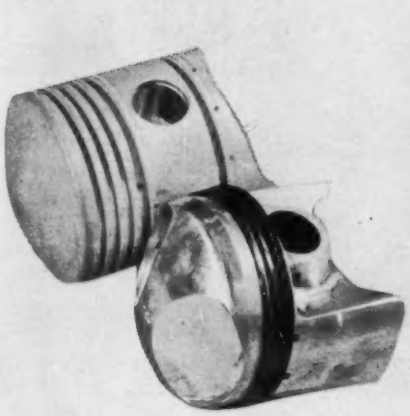
which can be infinitely varied because of the FWD, and a 48-inch tread.

So much for statistics. Those familiar with good engineering practices can see how such components, if bought cheaply enough, could be highly desirable in a land where everything has to bè big to be good. "There is no excuse for a heavy car," is one of Devin's sayings and his ensuing experiments were to lighten the Panhard further as well as to put it into a reasonably attractive skin.

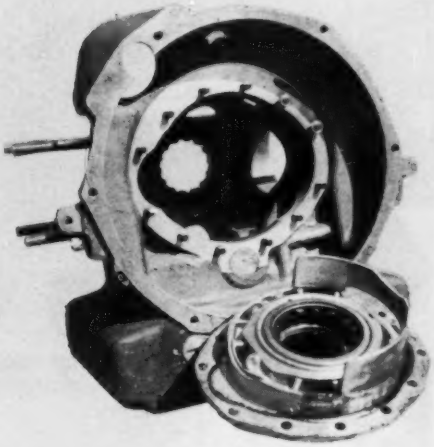
Beginning with a simple box frame of Shelby tubing,



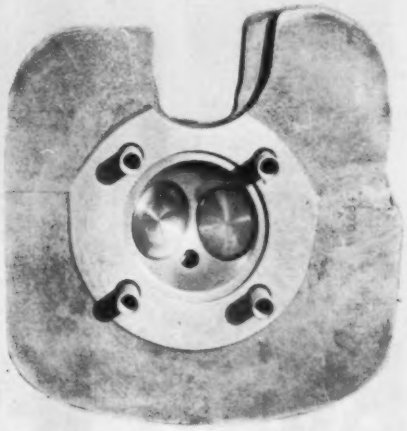
Racing factory Panhards used one twin-choke Solex carb for each cylinder, Devin has refined by using Webers. Horizontal (Solexes were downdraft), these meter fuel better than one big pot.



Stock Panhard piston at top is no slouch, but slipper-type Norton slug has three instead of five rings, high dome, big valve clearance cutouts.

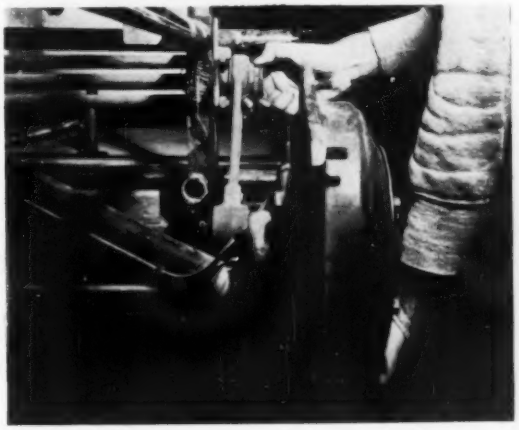


Reliability starts right here. Two big roller mains scale over three inches diameter. Rear main housing is removed to insert crankshaft.

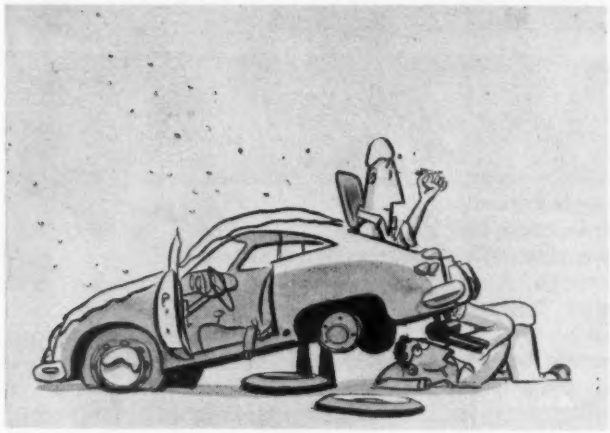


Norton chamber is classic hemisphere, has intake port angled slightly toward offset plug hole. Big notch at top was for shaft drive to cams.

designed to accommodate stock Panhard front and rear assemblies, Devin, with no pretense of being a body stylist, soon came up with a streamlined envelope shell molded in Fiberglas-plastic. The shape doesn't qualify as being either ugly or beautiful, but it is easy to mold and assemble. A number of these bodies were made and sold, principally in California. In a mid-fall excursion at Pomona, at least six roared off in one event. Most prominent was Jim Orr's blue-trimmed white skimmer which copped first in Class H and finished 12th overall in the Under 1500cc Main (out of 42 starters) with such company as four Porsche Spyders, a 1500 OSCA, six Alfa Romeos, four Lotuses and all sorts of modifieds. *(Continued on page 63)*

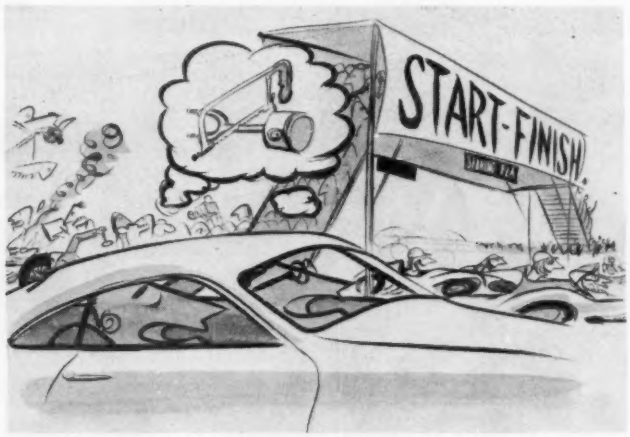


Rear suspension is trailing "V" arm; angle of link to transverse torsion bar can be set within half degree. Frame is simple box of Shelby tube.



Sebring, here we come! Just a few minor adjustments on the Porsche and we'll be ready.

ON, BORGHESE!



Bristling with energy, we arrive on the scene. Lack of sleep never deterred the enthusiast.

How NOT to go to Sebring.

Side-tracked for a while on Georgia backroad we get directions from gentleman farmer.

SEBRING, FLORIDA. Scene of the famous Florida International Twelve Hour Grand Prix of Endurance. Focal point of the entire sports car world in March each year. High point of American road racing. Center of all enthusiasts' interest.

The attraction of this fabulous event is almost irresistible to the lover of racing's color and clash, sport and spectacle. To two native California car fanatics, exiled in the winter-bound wastelands of Michigan, the call was irresistible.

"Let's go to Sebring."

"Okay, you talked me into it. Shall we fly down?"

"You crazy, boy? We'll go in my ever dependable hopped up Porsche."

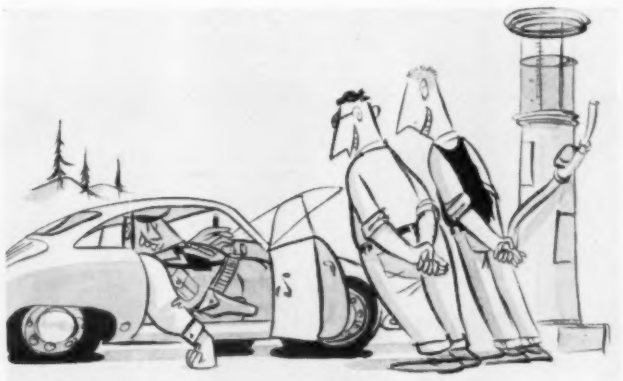
"Hmmm. Is it running all right?"

"Sure. Just needs a few adjustments. We can do them the night before we leave. Nothing to it, boy!"

Thus began a great adventure. Helpful friends encouragingly assured that the car would never make the state line. As if to underline their comments, the Porsche slyly shed one of its exhaust pipes, produced three flat tires in twenty minutes one evening, bathed its clutch in expensive imported motor oil, and responded to the fitting of driving lights by blowing innumerable fuses. But nothing daunts pure enthusiasm, and Thursday morning before the great race saw two intrepid Porsche travelers well on their way.

State policemen, proverbially courteous and friendly, commented on our sober driving.

We quickly adjust to seat belts. Reflex to remove them upon getting up was immediate.



Heading home, we stop at garage and hobnob with local constable. Impressed with Porsche.

The Porsche was handling like a dream—floating. And suddenly, we were flying.

Proceeding through the Southern rural areas we find the natives friendly. So were we.

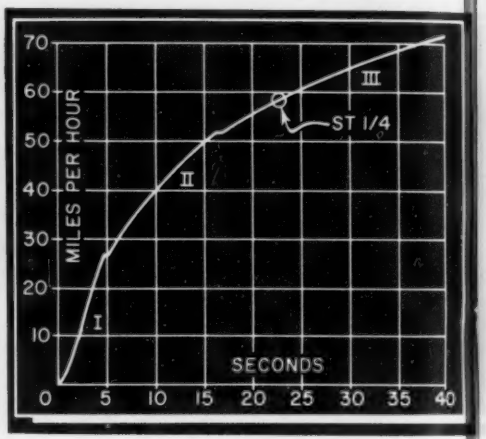
Sebring was never like this . . .

Before starting, it had been agreed that conservative, steady driving was the key to a successful trip. And, aside from an occasional 90 mph sortie through an obscure hamlet, with the passenger emitting ringing cries of "Oh, Borgese!" to entertain the populace, this was adhered to. These techniques were much appreciated, especially in the South. In fact, several courteous state policemen found time, despite their pressing duties, to stop and express their views on the subject.

Among the many opinions offered by interested observers before the journey started, by far the most common was that the car would be so uncomfortable that complete exhaustion would set in before the halfway mark was reached. Favorite point for ridicule was the seat belts in the car.

(Continued on page 65)

SCI ROAD TEST: METROPOLITAN 1500



Metro leans heavily in a tight turn at a slow moderate speed. Decisive understeer was experienced in these bends which could be changed to sudden breakaway by a quicker movement of the wheel and throttle.

THE Nash Metropolitan is a relative newcomer to the American scene, having entered the small car market unobtrusively in '54. Yet despite this recent appearance, and the already indoctrinated *big-car* buying public, this little import has grown in popularity throughout the country. And rightly so, for its designers have recognized the need for a small auto in car-crowded urban areas, and approached the problem with real and practical insight. The car is built and assembled in Britain, using British components, by the British Motor Corporation (BMC) and shipped to the U.S. for distribution. The big money behind the Metropolitan, of course, is the American Motors Corporation, and the biggest slice of the production is aimed at the American market.

Yet any notion that this is one of "them foreign jobs" or "sports cars" should be quickly dispelled because its overseas manufacture and assemblage does not include its right to be called a sports car. But while the Metropolitan is no sports car, and while we have no intention of assessing it as such, it's a car which does merit attention and close scrutiny. Its function is unmistakably utilitarian, but utilitarian to suit these shores.

Its behavior in the crowded city is nothing short of phenomenal when compared with the lumbering hulks powered and geared for speed on the highway. It darts nimbly in and out of traffic with no strain or pain, and squeezes through the most unlikely openings while the giants sit immobilized by their own bulkiness.

Gearbox and final drive are ideally suited to around-town driving. Most city driving can be done in top cog at speeds as low as eight mph without excessive lugging. For the extra go when a cabbie tries to play crinkle-fender for first slot at the traffic light, it's necessary only to push the stick into second, and crush the gas pedal. Ten chances out of ten you'll get there first.

The low rear end ratio somewhat limits

the cruising speed to 55 and 60 mph, but unless you're angling for a speeding ticket, this should be more than sufficient on most inter-urban expressways. Hazards of entering and leaving parkways are kept minimal because of the flexible range of speed in gears. From dead stop to fifty mph in second gear, the car will accelerate into the flowing traffic in 15 seconds, which is quick enough to stay well ahead of the oncoming vehicles. Thanks are also due to the spunky little mill which seems to produce a few more revs every time you prod it.

Basically, the engine is the same as that in the MGA and the Magnette, and service should be excellent throughout the country. Incidentally, for those that might want a little more push in the power department, the manifold arrangement along with the dual carbs of the MGA can be adapted to the head easily. The head can be shaved to boost the compression to the equivalent of the MGA's 8.3. Everything in the engine compartment is accessible and there's plenty of room in which to work.

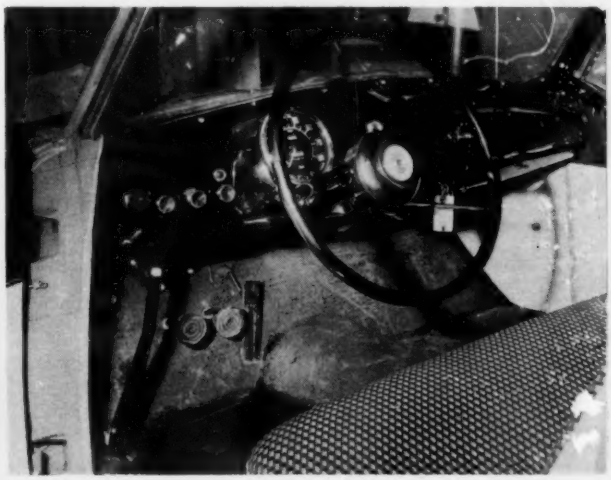
When we took possession of the car the odometer read 381 miles—practically off the assembly line—yet the engine fired up easily with very little choke even in near zero weather. Idling is smooth although the tappets on our test car were noisy. With that little mileage on the clock, loose tappets are considered better than tight ones. (For precaution we had the car checked out by Frank de Langton of Competition Tuning in Long Island City.) The carburetor is simple Zenith and should be familiar to U.S. service departments. Response to the throttle is immediate and when floorboarded in any gear, at any speed, the engine pulls with a minimum of vibration. Flat spots in carburetion were not discernible—very commendable for so new an engine.

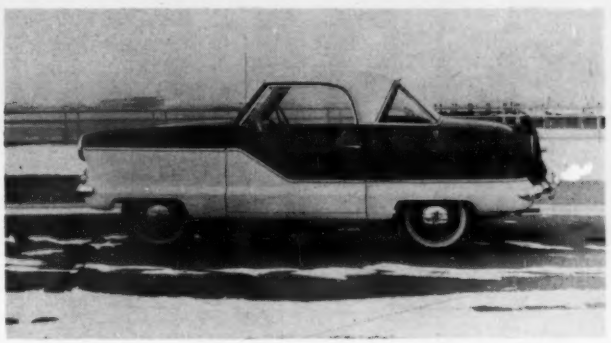
Clutch pressure was neither stiff nor sloppy, but firm enough against the foot to telegraph its position at any given point. After three and a half hours of stop-and-go driving through traffic stalled by snow, we were more fatigued from monotony and mental anxiety than the physical exertion of exercising the left leg on the clutch pedal.

The gearshift lever is ball-joint mounted in the dash which flexes slightly under the strain but we attributed this to the newness of the parts. The shift pattern is standard American "H". Synchromesh on the top two gears is good. According to specifications synchromesh is also indicated on low gear but seemed somewhat absent on our test car. However, there was little difficulty in finding first at rolling speeds. The latitude of second gear is nothing short of amazing. It can wind out to 57 mph and then some without engine falter or excessive second gear noise. As a matter of fact we found all gears quiet. First is the getaway cog, and while the shock of acceleration won't crack the pelvis, the engine will rev out to 30 mph with the very slightest strain. There are darn few cars than can leave the Metro wishing for a few extra turns. Top is a good all-around gear that takes the drudge out of city maneuvering. Once in motion, third gear can be engaged, and from then on it'll pull the car for hours at ten mph on up to top speed. Of course, the rear-end ratio limits cruising speed. Just remember, this car isn't called the Metropolitan for nothing.

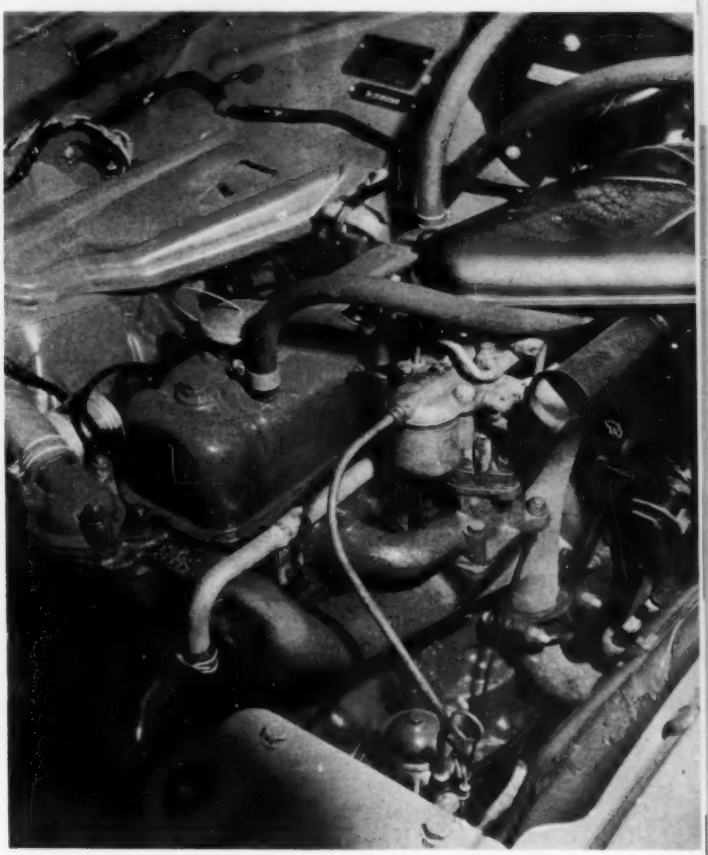
The suspension is flexible and of long wheel travel which makes the ride a comparatively comfortable one. Proper relating of spring rates makes up for the short wheelbase and keeps the car from oscillating in rocking horse spirit. Road shocks are distributed throughout the monococque frame and body, thereby reducing vibrations within the car and through the steering wheel.

Front suspension is typically Nash, employing coil and wishbones with the coil spring sitting atop the kingpin and upper arm and reaching into a specially constructed well under the fender. Girling telescopic shocks are mounted in the lower control arm recess and inclined slightly toward the center of the cam. At the rear, semi-elliptic leaf springs are provided with rubber bushings to reduce noise. Each of the five wide leaves





UPPER: Dash panel is part of unit construction forming a sturdy cross brace. Clock is large, easy to read. Classic handbrake is very effective. Low floor tunnel makes life easy for the third passenger. LOWER: As shown, overall length is short (149½ inches from bumper to bumper). The convenience of small car for city use cannot be overemphasized.



This is essentially the same power plant that sits in the MGA and Magnette. Difference is in the head, and manifolding. As is, mill has guts of its own.

Everything in engine compartment is accessible. Note, that while car is unit-frame constructed, skin is not stressed. Pressed panels offer support.

Took the turn too fast, and got all out of shape. Car is shown leaning heavily, and plowing nose into pavement. Reason: had to brake on curve.

Leaving long, fast turn at somewhere between 55 and 60 mph. Despite slick condition of road, Metro stuck tightly, without sliding.

METROPOLITAN—1500

TEST CONDITIONS:

Number aboard	2
Temperature	33°F.
Etc.	Wind about 5 mph, damp concrete surface

PERFORMANCE

TOP SPEED:

Two-way average	74.7 mph
Fastest one-way run	75.6 mph

ACCELERATION:

From zero to	Drive range
30 mph	6.0
40 mph	9.6
50 mph	15.4
60 mph	24.1
70 mph	37.3
Standing ¼ mile	22.4
Speed at end of quarter	59 mph

SPEED RANGES IN GEARS:

(1)	I	0-29
	II	2-52
	III	15-Top

SPEEDOMETER CORRECTION:

Indicated	Actual
30	28.7
40	38.2
50	47.1
60	56.0
70	66.3
79	73.9
80	75.6

FUEL CONSUMPTION:

Hard driving	
Average driving (under 60 mph).	

BRAKING EFFICIENCY (10 successive emergency stops from 60 mph, just short of locking wheels):

1st stop	63
2nd	63
3rd	59
4th	50
5th	52
6th	50
7th	54
8th	49
9th	54
10th	49

SPECIFICATIONS

POWER UNIT:

Type	4 cyl. in line
Valve Arrangement	Overhead, in line, pushrods
Bore & Stroke (Engl. & Met.)	2.87 x 3.50 ins. 73.025 x 89 mm.
Stroke/Bore Ratio	1.22/1
Displacement (Engl. & Met.)	90.9 cu. ins. 1489 cc
Compression Ratio	7.2/1
Carburetion by	Zenith Downdraft
Max. bhp @ rpm	52 @ 4500
Max. Torque @ rpm	69 @ 2100
Idle Speed	800 rpm

DRIVE TRAIN:

Transmission ratios	
I	2.84
II	1.49
III	1.00
Rev.	3.37
Final drive ratio (test car)	4.3
Other available final drive ratio	None
Axle torque taken by	Rear leaf springs

CHASSIS:

Wheelbase	85 ins.
Front Tread	45¼ ins.
Rear Tread	44¾ ins.
Suspension, front	I.F.S. coil spring & wishbone
Suspension, rear	Semi-elliptic leaf
Shock absorbers	Girling telescopic
Steering type	Cam & lever
Steering wheel turns L to L.	2¾
Turning diameter	34 ft.
Brake type	Girling hydraulic
Brake lining area	76.8 sq. ins.
Tire size	5.20—13

GENERAL:

Length	149½ ins.
Width	61½ ins.
Height	54½ ins.
Weight, test car	1885 lbs.
Weight distribution, F/R	55.2/44.8
Weight distribution, F/R, with driver	56.3/43.7
Fuel capacity—U. S. gallons	10.5

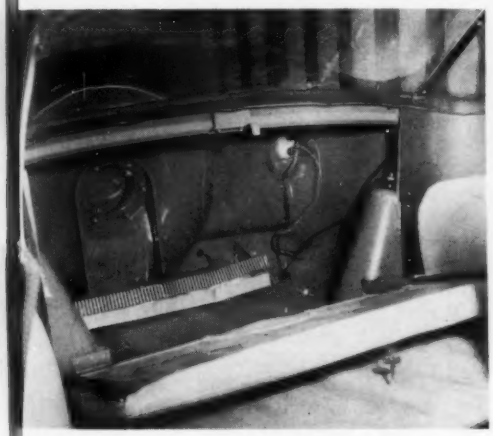
RATING FACTORS:

Bhp per cu. in.	0.573
Bhp per sq. in. piston area	2.01
Torque (lb-ft) per cu. in.	0.759
Pounds per bhp—test car	36.3
Piston speed @ 60 mph	2320 fpm
Piston speed @ max bhp	2630 fpm
Brake lining area per ton (test car)	81.2 sq. ins.

has a polythene plastic button at its tip to reduce frictional squeaks. The rear shocks are also Girling telescopics and are mounted between the axle and special housing in the trunk compartment.

With the windows wound up tight there is only a fait hint of wind noise when buzzing along at full bore. But open the window ever so slightly and a high pitched whine is produced that gives the impression that the car is hurtling at record breaking speed. Motto of the story is: keep the windows shut, unless you roll them all the way down to take advantage of the elbow room given by the door cutaways.

Response to the steering wheel is far better than on the average American car. Lock to lock, the wheel takes 2¾ turns, is smooth, and returns to straight position after slow turns. It does have a tendency to lag however, in faster work. Understeer does cause a slight delay in response



Trunk is reached through rear seat backrest only. Space is at premium, but small parcels can be accommodated in the back seat or trunk.

through sharp bends, but can easily be anticipated upon better acquaintance with the machine. By playing the wheel and pedal though, the rear end can be broken loose in one helluva hurry, and in that instant everything that was parallel is perpendicular. The Metro does lean more than most in turns as is attested to by the accompanying pictures. This is not disturbing, however, because the compactness of the car gives the driver a sense of control and confidence.

Brakes are Girling hydraulics all around with two leading shoes at the front. Their response to the pedal is instant, and under hard use will show some fade. In our braking test we found their stopping power smooth and even. At the beginning there was no lateral pitching but as we approached the last few stops the evenness seemed to fade with the stopping power. *(Continued on page 62)*

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Maserati

(Continued from page 15)

Another of the little things that count is the rigid footrest for the left or clutch foot, a hallmark of the Italian competition car. What it does is let you maintain balance while steering through turns. During hard cornering a seat belt is not enough to anchor you and you have to use the steering wheel for an anchor as well as for directing the car. The Italian "dead pedal" puts the left leg to work when it's idle, stiff-legging you into the seat and leaving your arms free to concentrate upon steering alone. Some cars have a natural footrest like this. Those that don't would do well to adopt the dead pedal.

The 200 SI's steering is precise, of course, and it's perfectly mated to the car's wheelbase and power. The transmission (Porsche patent) is full synchro and one of the world's very best. It has a ball-and-socket in place of the traditional Italian gate, but the advantage of the latter's positiveness is matched by the reckless way you can sling the Porsche-type lever anywhere. It pops silently into any cog and you can yank it into First without qualms.

The 200 SI is in between the small and the big car. It has been laid out for drivers of "average size"—no taller than about five feet eleven. Anyone much taller would have some trouble getting into it. It's designed for straight-arm steering, which is very comfortable. There's lots of room between the pedals and the shift lever is perfectly at hand. The firewall is well sealed and air from the engine space is vented from the body sides in such a way that we observed no heating of the cockpit area.

The Maserati's bodywork is beautiful. Our test car had been pushed a great deal in and out of showrooms and on and off trailers. Its aluminum panelling was flawless, without a ripple. This degree of quality is unusual for Italian racing machinery, but frugality was evident elsewhere in the 200 SI. Where the body supports are welded to the frame, for example, the welds are rough and hastily done. But the frame welds themselves (where strength really counts) are done smoothly and with great care.

Front suspension is by coil springs and wishbones and includes an anti-roll bar. Rear suspension utilizes a de Dion layout with transverse spring and a light-alloy center section.

The engine is a dohc four with two valves per cylinder in hemispherical combustion chambers. The cams, blunt as broom handles, are driven by a gear train and act against roller tappets or cam followers. These are easily adjustable, and each roller runs on 24 needle bearings. The automatically-rotated valves are inclined in the light alloy head at an included angle of 80 degrees, and each valve is closed by a pair of hairpin springs giving a closed pressure of 33 pounds, and 193 when open. Both the intake and exhaust ports are choked down to form rather tight venturis just outside the valve guides. The valve timing, with 80 degrees of overlap, is:

Intake opens 45° BTC
closes 75° ABC
Exhaust opens 75° BBC
closes 35° ATC

The phenomenal output of modern racing engines is not often obtained without recourse to elaborate scientific techniques as well as trial-and-error experiment.

The 200 SI's block is of light alloy with wet liners, there are five main bearings, and the short con rods are of a broad I-section. There are two spark plugs per cylinder fed by two distributors driven by the cam-drive gear tower. Carburetion is by a pair of dual-throat 45DC03 Webers, giving a one-carb-per-cylinder effect. All the main organs are force-lubed by means of a three-element pump which has two scavenging components and one for feed. The dry-sump system draws from a two-gallon reservoir at the rear of the car and includes an oil radiator at the front. In the tradition of the marque, this Maserati has an abundance of external oil lines. Structurally, the 200 SI is a lot like the 300S six with two cylinders lopped off.

Warren Olson, who now services our test car in Beverly Hills, describes it as a completely straightforward machine. There's nothing strikingly radical about it, nothing tricky— except for the absence of timing marks on the flywheel. To time it you must use a degree wheel; identical timing for each cylinder is achieved by the well-known technique of juggling tappet clearance. Small nuts and bolts can be frustrating too, often lacking lead threads and differing in size.

Our test car is slated to run at Sebring with Reventlow and Pollack co-driving, as part of the factory team which will also include Fangio, Behra, Shelby and perhaps Moss. After Sebring the car will go back to Modena for servicing, and then Lance will drive it in whatever competition the European gasoline shortage permits; he has just been invited to drive in the Mille Miglia. In the eastern U.S., Bill Wonder will be running a twin to the Nürburgring car, with the latest 200 SI engine. With his excellent preparation, it should show well in SCCA events

The availability picture for Maserati cars in the U. S. has undergone profound change in the last few months as a result of the Orsi brothers' (they own the firm and are financially famous) plan to greatly expand their production and their market. Their two-liter *gran turismo* cars now are reaching this country in substantial quantity. Competition machines, once made in such limited numbers that they were doled out only to top drivers, now are much easier to come by in one-five, two, and three-liter form. Tremendous touring machine developments are under way. A 3.5-liter Frua-bodied convertible is about to be introduced. AND a 1.5 Maserati spyder, a mass-produced car very much a match for the Giulietta, already has been shown in prototype form. They'll be made mainly for the U. S. market in lots of 1000 and promise to be one of the year's major sports car developments.

Maserati sales and service facilities are at least 1000 per cent better than they've ever been in the U. S. On the east coast there's the Maserati Corporation of America, headed by Serge Toumaniantz at Westbury, Long Island. On the other coast there's Charles Rezzaghi's excellently-equipped Mille Miglia Motors in San Francisco. And in North Hollywood there's Phil Rauch's dynamic Maserati Southwest Distributors. Heading this last operation is Harold F. Coole, who master-minded another great marque's penetration of the western U.S. It appears that men, machines and service now are available to make Maserati cars a familiar sight on American streets and road courses.

Griff Borgeson

BMW 507

(Continued from page 21)

tudinal torsion bars, one on each side of the car. The rear end is straightforward, with a rigid axle which is located at three points: the torsion bars on either side and to the frame in the middle. Though the rear end is not a quick-change type, the ratios can be altered within an hour's time. Four adjustable telescopic shock absorbers are fitted as standard. These are the new Dutch "Koni" shocks, and BMW seems to be completely satisfied with them.

The accompanying test data is taken from actual factory-conducted tests on the Model 507 in convertible trim. Acceleration data, top speed and braking efficiency have been made available to SCI by Mr. Von Falkenhausen, chief of research and of racing with BMW. Actually these reports tell their own tale, but the reader's attention is drawn to two acceleration times (0-60 mph in 7.2 seconds, 0-100 in 23.0 seconds), and to the maximum speed of the car. There is a difference of almost 10 mph in maximum speed when the car is equipped with a 3.42 rear axle ratio; this version with a hard top reached 136 mph on the autobahn., This is quite good, with the weight of the car exceeding 3100 pounds fully loaded.

There is no reason at all to doubt these figures, for German automakers are famous for their accuracy and modesty in evaluating their products. SCI hopes to get a test car of the Type 507 shortly, so that a complete assessment of the car's handling qualities and overall performance can be drawn up. Until that time scrutinize the factory data closely; it's a fantastic example of thoroughness and impartiality.

Jesse Alexander

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Hustling Hermit

(Continued from page 17)

as can be discovered, he only broadcast once, and it was characteristic of him that he donated the fee for this spiel to a children's hospital. It wasn't known that he had done so until after he died.

Parry Thomas had more engineering skill in his little finger than most other Knights of the Land Speed Table in their entire bodies. The only partial exception to this was and is Captain George Eyston, who moved into the L.S.R. picture a decade after the Welshman was killed; and not even Eyston ever designed a car himself, whereas Thomas was the sole designer of some of the most advanced automobiles of his day.

His first essay in this field, the straight-eight Leyland passenger car of 1920, was a technical *tour de force* and made an overnight sensation. There was hardly a feature of this majestic barouche that didn't proclaim its creator's passion for doing a familiar job in a way that was different, better. Thomas's individuality expressed itself in such terms as triple eccentric drive to the single overhead camshaft—a noise suppressing practice adopted six years later by W. O. Bentley; fully hemispherical combustion chambers; a common cam operating both intake and exhaust valves—thus only eight cams in all; cantilever leaf springs to return the valves; cooling fan speed controlled by suction governor; pressure lubrication to every working part in the plant, including the wristpins, which received their supply via hollow conrods; and thermostatic regulation of airflow to the radiator.

In only one particular, its bore-stroke ratio, did Thomas's engine conform to the conventional thinking of its day. Measurements were 89 by 146 millimeters, making the displacement 7266 cc. Fed by a single carburetor, and therefore obviously underfed, its maximum output was 145 bhp at probably somewhere around 2500 rpm. One hundred horsepower was given off at 1800 revs and 60 at 1000 rpm. The original purpose of the project being to out-Rolls R-R in silence, refinement and flexibility, little attempt was made to procure a lot of power relative to capacity. Later, when Thomas was no longer concerned with a dowager clientele and harnessed the big Leyland powerplant for races and records, the carburetion deficiency was duly rectified and the output figures went to far higher levels. What these levels were is a secret that probably died with him; by 1924 they sufficed for a Land Speed Record at 129.73 miles per hour by a car of extravagant cross-sectional area and fairly crude aerodynamic shape.

Too, the chassis of the big Leyland abounded in interesting gooks, including a rear suspension combining laminated and torsion springs, anti-sway torsion bars

(Continued on page 53)

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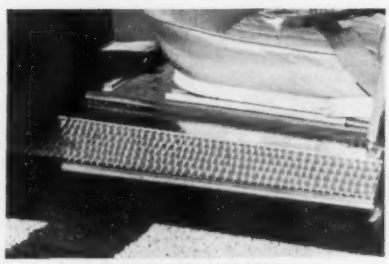

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Hustling Hermit

(Continued from page 52)

front and back, power assisted brakes (but on the rear wheels only), a splayed back axle to counteract road camber, and automatic chassis lubrication actuated by axle rebound following spring deflections. All these features were reproduced on successive generations of the Leyland and Leyland-derived track cars that Thomas raced and broke records with. The plain inference is therefore that, while ostensibly designing the parent passenger car to please the elderly and sybaritic, he was all the time envisaging its racing possibilities in rebodied and hopped-up form. As it developed, in fact, the fame of the Leyland straight-eight was earned almost entirely in speedwork; perhaps because of a selling price that even made the Rolls tag look modest, the only production records set by Leyland were minimal ones. As however the staple product of the company was trucks, the commercial failure of the automobile didn't matter much.

A characteristic of the Thomas-designed suspension system was a resilience and range of deflection far in excess of anything normally used for either touring or racing back in 1922, the year of Tommy's Brooklands debut. This flexible springing gave the big Leyland a peculiar heaving gait like a wounded whale, causing track veterans to speculate without much optimism how long it would take for the taciturn Welshman to heave himself clear over the bankings and into the

At maximum speed or near it, cars of the Leyland's calibre were natural tenants of the upper lands of the banking, and Thomas, who had the unique distinction of breaking the lap record seven times in a single season, could claim a better right to the top strip than anyone else. One time, coming up to pass a slower rival who was leaving less than a car's width between his outer wheels and the shoulder, Thomas deliberately ran *his* outside wheels a foot over the lip, uprooting a couple of small bushes and regaining the concrete seventy feet further on. On the other hand, faced with even narrower gaps on the legitimate passing side, he was just as liable to wrench his silver and blue bolide under the tail of the competition and go by on a line that by every rule in the book was "impossible" for a car travelling that fast and weighing that much.

It was always a point of controversy whether Parry Thomas dealt only in calculated risks or whether he sometimes abandoned arithmetic in favor of blind faith. Endowed as he was with driving skill and judgment that was scarcely approached by the other great tracksmiths of his day—Campbell, Eldridge, Cobb, Zborowski, Don and others—it is certain that the Welsh hermit often essayed an apparently suicidal maneuver in complete and justified confidence that he could make out. Much of this confidence, of course, was born of his perfect and comprehensive knowledge of his car and its capabilities, an asset exclusive to drivers who design their own

(Continued on page 54)

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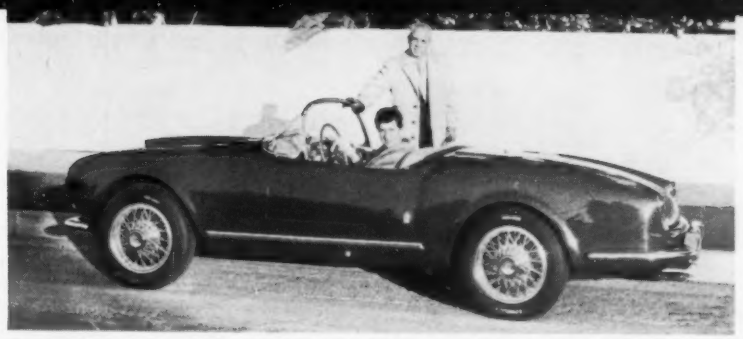

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Hustling Hermit

(Continued from page 53)

machinery from scratch, build most of it with their own hands and minutely supervise what little of it is delegated to others.

In this, Tommy was unique among British racemen of his generation, although his case was strikingly paralleled by young Frank Lockhart on the other side of the ocean. Tommy followed Lockhart's career with great admiration and interest. If there is a corner of Valhalla reserved for designer-builder-drivers who lose their lives on sand (Lockhart, it will be remembered, crashed fatally at Daytona thirteen months after Thomas was killed at Pendine), these two should have plenty of notes to compare.

Supporting the view that Parry Thomas had a telescopic neck are various authenticated stories of his tire testing exploits at Brooklands. For these trials his standard formula was to keep right on lapping at full noise until either a tread flew off a casing or a casing left the rim. Once a Russian tire plant shipped him samples of its wares for destruction testing, asking Thomas to quote for the job. The quality and design of the merchandise being visibly horrifying, he put in an astronomical tender, confident that this in turn would horrify the Russians. It didn't, and their answer enclosed payment in advance to prove it. So, being a man of his word, Thomas subjected the Red shoes to the regular treatment. Luckily for him, they burst one at a time. What he'd been nervous of, as he admitted afterwards with his customary absence of emotion, was that two or more might pop simultaneously.

Perhaps the most famous Brooklands race that Thomas ever drove was a single-combat match in 1925 against Ernest Eldridge and his 21 liter F.I.A.T., *Mephistopheles*, which Malcolm Campbell's Sunbeam had recently dispossessed of its 145.9 mph Land Speed Record. This duel, outcome of a challenge by Thomas for stakes of 500 pounds (around $1400 at present exchange rates), was run over ten laps of the 2.7-mile track and wrung the following poignant passages from the *Autocar's* quill: "A more horrid spectacle to sit and watch has probably never been seen in motor racing . . . several well-known drivers hurried to the bar, at which they remained out of sight, full of apprehension, until the race was over." The apprehension was well merited. It was a tigerish fight from start to finish, further enlivened by both cars peeling tire treads at over two miles per minute, the F.I.A.T. from a back wheel, the Leyland from a front one. Thomas, in one of his theoretically impossible passing maneuvers, received a timely rap on the wrist from centrifugal force and slithered obliquely from near the lip of the steeper banking to the track's centerline before regaining control. But he won nevertheless, at 123.23 mph average, turning a single lap at the above-record speed of 129.7.

Among the innumerable records, of local, national, international and world status, that Parry Thomas set at Brooklands, there was one of unofficial standing that nobody ever cared to challenge: with both eyes open he turned three-figure laps at various times with only three tires inflated. This would probably have been impossible on any car but the Leyland, which not only had abnormally soft suspension but also much lower geared steering than the classic track heavyweights of its time. Physically, too, Tommy had the strength and endurance of an ox.

For cars of lap record potentiality, the full Brooklands circuit had one feature—an unbanked re-entrant curve—calling for something akin to a road race technique. This in consideration, it is surprising that Parry Thomas, king of the *piste de vitesse*, was by no means a great road driver. Fast, yes, but lousy to boot. It is probable that he realized his failings in this field, and therefore seldom if ever contested a true road race. In fact, his best known performance on the highway was in the role of a volunteer bus driver on the streets of London during the general strike that threatened to paralyze British industry and communication in 1926. With a conrod from a truck engine thonged to his right wrist as a weapon against any striker who might care to start something personal, he threw himself into the job with a kind of

(Continued on page 55)

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Hustling Hermit

(Continued from page 54)

grouchy zest. Ignoring official time schedules but keeping a keen eye on the stopwatch he carried, Tommy amused himself by progressively improving his own record for the route. When it looked like he was turning in a slow trip, he just skipped a stop here and there, leaving would-be customers yelling blue murder into his slipstream.

I don't know for sure how many straight-eight Leylands Thomas rigged for racing, but two that I do have tabs on both met picturesque and violent ends. While practicing for speed trials at Boulogne in 1925, on a wet, narrow road with a fierce camber, Tommy went into a whirl at top speed; after shooting backwards for a distance that fortunately was long enough to slow the car to less than seventy, it rammed a tree tail-foremost and was completely wrecked. The only thing left worth shipping home to The Hermitage was the front axle. That time, Thomas undoubtedly owed his life to the enormous strength and weight he always built into his cars. The impact curled both the chassis girders back on themselves in a great up-and-over arc that finished three inches from the back of his head.

A cousin car to this Boulogne casualty was bought by a fellow called Munday after its designer's death. During a Brooklands race in 1936, Munday's Leyland-Thomas spilled its entire engine, all 7¼ liters of it, out onto the concrete at around 125 miles per hour. At that, the driver and the rest of the car escaped destruction, but the latter survived only to be bombed to bits by the Luftwaffe in 1940.

Compared with the children of his own brain, the mighty *Babs* was a primitive monster. He didn't design this one but the modifications he carried out were quite extensive enough to justify his usual practice of naming it after himself. It was bitterly ironic, too, that the big girl's chain transmission, a crudity that must have been a pain in Tommy's scientific neck, caused his death.

Babs had been built for playboy Count Lou Zborowski (who was killed at Monza on a Merc in '24), to the drawings of Colonel Clive Gallop, who played important technical parts in the infancies of two famous British marques, Bentley and Aston Martin. Zborowski named his trundler the Higham Special, after the English village where he had his palatial home. When Thomas acquired the car he re-christened it the Thomas Special, later adding the affectionate soubriquet of *Babs*. He paid one hundred and twenty-five pounds for her (about $370 at modern values), his total investment being as little as 850 pounds after he'd brought her up to Land Speed Record standard.

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(Continued on page 56)

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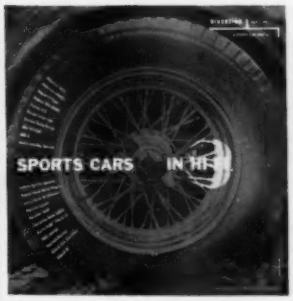

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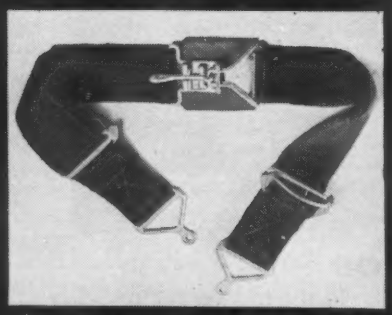

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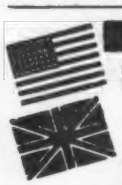

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Hustling Hermit

(Continued from page 55)

pounds. As however her new owner's ambitions centered mainly on straight-line running on smooth sand, in other words the Land Speed Record, this questionable strength-power ratio was not of much importance. As it developed, the car duly pulled off the L.S.R. the very first time Tommy appeared with it in public, clocking 169.23 over the flying kilometer at Pendine in the summer of 1926. This burst jacked the record up by 17 miles per hour, the biggest hiding it had taken in the whole of its 28 years' history. The next day, after expurgating a misfire. Thomas improved his speed to 171.09 mph.

Early the following year, Campbell visited Pendine with his Napier-Campbell and went one better again, 174.88 mph. That was the figure Tommy was out to beat when the broken driving chain knocked his brains out.

Shortly after *Babs's* Pendine triumph in 1926, Thomas returned to Brooklands and filed entries for three races in the first meet that came up, nominating John Cobb to drive *Babs* twice and himself once. Although Cobb was already an experienced hand with big man-hater cars, a comparison between his performance and Tommy's on the same machine and under identical conditions puts Thomas's skill and fearlessness into true perspective. The hermit's best flying start lap was nearly ten miles per hour faster than John's. Here again, the fact that Thomas knew every nut and splitpin on the car, and exactly understood its capabilities and limitations, no doubt accounted for some part of the difference. Cobb, of course, had about as much knowledge of automobiles as Little Red Ridinghood.

Born and raised in the unpronounceable Welsh village of Bwlch-y-ciban, of which his father was vicar, Parry Thomas had a pious upbringing. Although in his adult life he certainly never wore his religious convictions, whatever they may have been, on the sleeve of his Fair Isle jersey, he had an integrity and underlying kindliness that won him everybody's respect and admiration. Behind his taciturn and even morose manner there was a vein of humor and boyishness that is a treasured memory of the few who could claim his friendship. Veteran race mechanics around the Byfleet district still vie in reminiscence of the greatest European trackman who ever lived, including a prideful greybeard whose favorite souvenir is a pair of flannel pants that had the seat ripped out by Bess and Togo in the winter of '24. "Paid me double their value," he recalls, "and then, dammit, what does he do but add in an extra quid to buy a Christmas spree for my kids." That would be just like John Godfrey Parry Thomas.

Dennis May.

Redex Trial

(Continued from page 23)

Asked what he was doing in Katherine in mid-week, he shrugged "A bit sticky," he said. "I should be out at the station for muster, but the strip's too soft. Aircraft can't land for another three or four days."

I said, "But isn't there a road out to the west from here? The map shows a track out via Wooleroo and Victoria Station, then on west."

"Mate," he said, "I think you've missed the small print, down at the bottom of that map: see,, it says, 'most roads and tracks impassable . . . November until March.' This year, a bit later." Like the newspaperman in Adelaide, he took time to be thoughtful. "Not that it's any boulevard any time," he said. "Might ride out and have a look."

We did. A little rented Vauxhall had done well, down from Darwin, but it bucked and complained as soon as we headed off the highway. Before we were out of sight of the paving, red dust was rising around the wheels and filtering under the doors. "Bull dust," said the station man. "You get used to it." On the flat plain, white ant towers stood like gravestones in a limitless cemetery —some a foot high, some ten feet high. A few coolibar trees fought for life, but the thin and twisted ghost gums with white trunks appeared already to have given up. After a quarter-mile, low gear was necessary. The Vaux yawed like a tug in a rip tide as we dodged boulders and scraped bindle-eye bush, then jounced down a small incline. Another hundred yards, and nobody needed to tell the driver to stop. Ahead was a depress flat, perhaps half a mile wide. Water from the late rains ran down ruts in the track as rivulets, then disappeared, as moving streams, and became part of the enormous mud pie ahead. A heaved rock landing where the road should be made a soft sucking sound, nothing more.

I said, "I don't think we'd better try it. Maybe, with a four-wheel drive . . ."

"Cobber," said the station man, "you couldn't get through there in a bloody tank. And in the dry, it's almost as bad. Hard clay underneath but two feet of loose sand and dust on top. Last year—he paused and grinned—"there were about twenty of those Redex cars, stuck in here at the same time. I heard somebody with some horses made a stinking packet—."

I lighted up a NavyChoice, just as if it tasted like a cigarette. I said, "Well, but they're not quite the full pound, those Redex chaps, are they, now?"

"The bottom," said the cattleman. "In sense, the absolute bottom."

Down here where kangaroos are a traffic hazard and wild donkeys bray at night, you learn the language fast. I knew exactly what he meant. I also knew what he meant when he wiped the back of his hand across his mouth,

slowly and thoughtfully. In the pub at Katherine, the flies were waiting for us. When the beer was poured, the flies came over and sat on the glasses. Where they landed, there was a small sizzling sound, a little column of steam.

Presently, I acquired the official rules and regulations for the Redex Trial. These revealed that the affair actually was not a race. Officially, it was "The Redex Around-Australia Reliability Trial," sponsored by an oil-additive company (Redex is the product) and conducted by the Australian Sporting Car Club, Ltd. "The trial," said the brochure, "shall be conducted on roads used by the public and shall be a test of vehicle reliability, driving skill and map reading." Prizes were topped by the $4,500 offered the over-all winner, with a variety of smaller awards and trophies for classes with 1100, 1500, 2500 cc and unlimited engine capacities; state winners ("most successful Tasmanian entrant," etc.) and supplementary divisions.

Each car was required to carry a crew of at least two; and each passenger, for obvious reasons, signed away his rights to sue anybody for what happened to him.

Rules were simple. Armed with route instructions and route cards (but no maps except those they brought themselves), crews were "to proceed from the start to the finish through controls, check points and other controls . . . in their proper order of designation" and at specified times. Thus, a car traveling from Sydney, New South Wales, north to Southport (a typical situation) might be required to cover the distance at an average speed of 45 miles per hour. If the contestant arrived on the dot of the specified time at Southport, or no more than ten minutes ahead of it, his route card would be validated without comment by officials. Earlier—or even a minute late—he would be assessed a certain number of penalty points. Thus, a perfect score would be a completely validated route card with no points—but penalties could be incurred not only for late or early arrivals, but also for failure to find check points, for working on a vehicle at other than specified times, for replacement of any of the specified parts (practically, anything on the car except tires), for breach of traffic regulations (which were *not* relaxed by state or municipal police) or for damage to the autos.

When 176 autos lined up in Sydney's Parramatta Park August 21, 1955, approximately 100,000 people were in and around the place to watch the start. Entries were headed by 41 Holdens (the sort of half-sized Chevrolet built by General Motors of Australia with a one-piece arrangement of body and frame); 29 Vanguards (English); 17 each of Ford V-8s, Peugeots (French) and Volkswagens. Zephyrs, Chevrolets, Plymouths, Renaults, Humbers, Morrises, Dodges, Austins, Hillmans, Hudsons, Skodas, Wolseleys, Consuls and Citroens were represented with two or more entries; and single hopefuls showed up driving Hansas, Fiat Topolinos, Singers, Mer-

(Continued on page 58)

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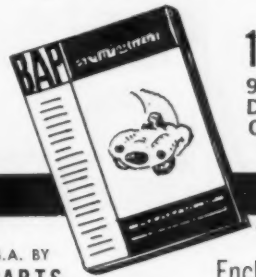

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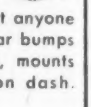

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Redex Trial

(Continued from page 56)

cedes-Benz, Vauxhalls (I was glad to see that, having developed some fondness for the breed) and a Spacemaster Diesel.

Drivers were as various as the cars. Three women journalists represented a Sydney magazine; several lean-looking drivers had been on reducing diets; a couple of foggy types had managed to get themselves hypnotized in the hope that the beating wouldn't hurt so much that way; and Jack Murray, 1954 winner, appeared in proper gear, including high boots for working in mud or dust.

The boys and girls popped up to Brisbane, moved inland around the river mouths, roared through Maryborough and ended at Rockhampton: 164 still present out of the 176 starters. Wharfies, naturally, quit work to watch them come in. But drivers weren't all exactly happy, in spite of their first views of rich cane fields, fat stock ready for the slaughter houses and other evidences of the near-tropics. At Southport, some had found water in their petrol tanks (Sabotage!). One team had discovered its tank leaking *after* it had reached a control point and temporary stop; and two others, the angriest, were routed from their rest periods by faked telephone calls that their tanks were leaking and that they had left their lights burning.

The trial was still successful, however, for 104 cars, none of which yet had any penalty points against it.

But things were getting a little tougher. From Rockhampton to tropical Cairns, northeasterly city of importance in Australia, the drivers not only had palm-lined roads, but variety; blinding sun for a while, then fog, then more sun. Frank Kleinig, of Sydney, had special problems. The throttle cable on his Volkswagen broke at a country village. No garage, no parts—but there was a mother carrying a small baby in the crowd which gathered. A safety pin from a diaper enabled Kleinig to get to Cairns; but nobody thought to ask how the baby got home.

At Cairns, the wharfies quit work to watch the cars come in. So did most of the rest of the 25,000 inhabitants. The showground looked a bit like a wrecking yard, displaying four cars which had been overturned, others with missing windscreens (those Queensland roads are *not* the state government's pride), headlights broken, noses pushed in and mudguards and bumper bars hanging by steel threads.

From Cairns to Hughendon, in the Cairns ranges, the trial had been nicely planned: mountain sections with 700-foot drops beside the winding, narrow road were run in darkness. Six cars ran off the road (not dropping 700 feet, however) when they hit boulders at creek crossings. Then things really got tough. Melbourne journalist-driver Laurie Whitehead described the section from Duchess to Mount Isa (the uranium-mining town) in the only way possible. It was, he said, "bloody impossible." On a mountainous road including the crossing of 51 unbridged watercourses, nine cattle guards (they're rough) and 32 creeks mostly bridged with one-way causeways, covered by water, indicated speed was 41½ miles per hour. Attempting to maintain it, seventy cars were wrecked or for other reasons abandoned. The dust-caked crews hitch-hiked into town (when they could get any other competitors to risk loss of points by stopping for them) or just walked. Eric Nelson, still among the leaders with only five penalty points against him, left the trial. He had to, after his diesel hit a kangaroo seven and half feet high, pushing the car's radiator back against the engine block.

Now they were in the dry heart of the country. The trial cars went up the metalled road through the Northern Territory (Tennant Creek, Katherine and Darwin) but did not quite equal the speed record set a couple of years ago by a Jaguar, which averaged close to ninety miles an hour for the thousand miles between Alice Springs and Darwin. (At the end of that drive, the Jaguar driver was arrested: for speeding.) Some crews quit at Isa, calling the trial a suicide race; but the 100 crews still racing reached Darwin and took time out to go crocodile-hunting, water-skiing and swimming (the blue-bottles weren't bad, that day.) Others, as in many towns, took over local garages to work on their vehicles. Garage owners stood watching, charged for use of their tools.

The trial came back to Katherine. In the sand pits west of town, there was sand. So many cars bogged down that nobody kept track of the number. Kangaroos and frilled lizards, wtih an occasional goanna (also a big lizard) and stately brolga birds five feet high crossed the track or wandered among the ant towers.

In some of the continent's worst (and most empty) country, the trial route led a thousand miles from Darwin to Fitzroy Crossing. This is the area where stockmen used to force cattle mobs more than a hundred miles between water holes, not daring to stop for fear of losing both the cattle and the drovers. This is an area where the only inhabitants for hundreds of square miles may be Myalls, aborigines still living apart from the whites, and in their loose tribal organizations.

This run was tough on everybody. Three of the crews whose cars had broken down decided that they'd had enough, chose to take a short-cut across the interior to Alice Springs, near the geographical center, thence home. Despite police advice against it, they thought the short-cut track couldn't be much worse than the route they'd just traversed from Katherine.

But it was. All three cars bogged down in loose sand, miles from the nearest cattle station or drilled well. William Cousins, 39, of Sydney, said, "We had to do something or perish. So we all prayed. Then we decided that the best thing we could do was to lift the cars bodily." In eighteen hours, six men lifted three autos a full mile across the sand to a solid footing.

By this time, the trial was away out west, where there's nothing much but pearling ports, petroleum exploration (maybe, some petroleum) and wind. Twenty more cars stranded in soft sand, foot-deep dust and dry creek beds between Halls Creek and Fitzroy. Near Broom, an added interest arrived: a truck carrying ten tons of dynamite was traveling the same route as the racers, and not in the least interested in staying out of *their* way.

Nearing Carnarvon, on the Indian Ocean at the westermost bulge of the continent, drivers screamed over desert tracks—and screeched to a stop at a sign painted on a bed-sheet: "Secret check point. Phone Carnarvon 5."

The recent bride whose telephone number it was didn't think the joke was funny. Neither did drivers who lost minutes trying to get the number from isolated country telephones.

To make up some of the time, the 71 cars now remaining hit 95 miles an hour on the 1,100-mile dash from Carnarvon to Perth, on the continent's southwest tip. "Kangaroos," said a driver, "were as thick as pedestrians in Sydney's Pitt Street. The only thing to do was to outrun them."

At Sydney, the trial ended—for the remaining 69 cars—on September 10. Whitehead and his co-driver, Robert Foreman, had lost only 27 points driving, but scrutineers found a hole in the floor of their Volkswagen and assessed 250 points for that, 250 more for a half-inch crack in a rear mudguard arch. Perkins ended with only 66 points but also lost 500 for superficial damage. Brooks, with 219 points, and no damage, appeared to be the winner until an appeal to the Royal Automobile Club of England (I don't know exactly how they got into the act) overruled judges and gave the $4,500 prize to Whitehead.

Of the starters, 13 Holdens finished, 14 Vanguards, seven Ford V-8s, six Peugeots, five Volkswagens, four Zephyrs, two Chevrolets, two Plymouths, two Humbers and one each of the Dodges, Morris Oxfords, Austin A-50s, Austin A70s and Skodas. "Somewhere along the 10,500-mile trail," said a Sydney newspaper, "lie or struggle their way homeward the other 107 battered things that were motor cars."

Subsequently, a Sydney journalist estimated the costs: approximately $16,500 to the sponsoring company; somewhere between $170,000 and $240,000 to the competitors in ruined cars, entry fees, time lost and garage bills. But this discouraged the enthusiasts very little. When the sponsoring company withdrew for 1956, two other oil companies promptly announced competing reliability tests for that year with bigger prizes and, they hope, more entries.

I don't know whether the Mackay taxi-driver won anything with his dinkum little car. Nor will I ever understand why a man who enjoys the Redex should be cautious of wharfies or afraid of a little southerly buster wind. Pleasant chap, but not quite the full pound.

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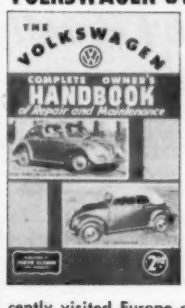

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M 196

(Continued from page 27)

acts as a positioner and prevents the tappet from turning. The sole job of this fork, otherwise, is to pull the valve back up to its seat, just as the peak of the opening cam is passed. To do this, then, the closing cam starts to rise from its base circle just as the opening lobe rides past peak. When the ramp of the opening cam brings the shoe tappet back to closed position, the closing lobe has reached its peak and, through the bell crank, has pulled the valve closed. Actually, all the opening cam had to do was get out of the way as the fork pulled the stem back up.

Then, for the long closed period, the closing cam is at its peak, and the valve is actually being held shut by gas pressure, under power or compression. When the opening cam again starts to push down the shoe tappet, the closing lobe turns past its other peak and allows the finger and fork to follow the stem to open position. Since the working surface of the finger is roughly 75 degrees out of phase with the shoe tappet, the opening and closing lobes are displaced by the same amount on the camshaft.

Between these two cams and drive mechanisms, each valve is kept under perfect control every step of the way. Only by complete breakage or a severe strain could a valve head touch a piston, and the size of the parts was such that this never happened. The closing cam is a big, heavy devil, so it's been drilled fore-and-aft for lightness. It also has oil outlets at each of its two sharp radii.

The shims under the tappets that we mentioned before actually adjust the main static clearance between the tappet, with valve seated, and the back face of the opening cam. There's another clearance to be considered, that affects the running free play in the valve gear. It can be expressed as the accumulated clearance along the closed circuit of opening cam, tappet, valve stem, bell crank fork and finger, and closing cam—the first and last being on the same shaft. This clearance is very cleverly and closely adjusted by moving the vee of the bell crank toward and away from the cam and tappet group.

As mentioned above, a single rocker shaft runs parallel to each cam, and is hollow and drilled for lubrication. Between each bell crank rocker and this shaft, there are two concentric sleeves, free to be rotated, and running at as close a total clearance as can be devised. Each of these sleeves is machined to be very slightly eccentric—that is, the inner and outer cylindrical surfaces are slightly offset with relation to each other. Thus, by rotating these sleeves under the bell crank, either individually or together, the working pivot location of the bell crank can be slightly shifted in any desired direction. This sets clearance, to sub-micrometric tolerances.

We haven't told you yet how they keep the eccentrics from turning, once the clearance has been set. Each eccentric sleeve has a collar on one end, the two collars for one pair of sleeves being right next to each other and of the same diameter. The outer edge of each collar is serrated. Each pair of serrated collars is kept from turning by a toothed, L-shaped clamp, held down by a single bolt. The clamps for adjacent pairs of valves are placed next to each other, the original idea being that one light, fabricated clamp and bolt would suffice for the serrations of two valves. This was done on early engines, and in fact through the entire 1954 season. At Monte-Carlo in 1955, though, these were the bolts that broke loose and ran wild inside the engines of Simon, Fangio and Moss. The latest versions use two separate machined clamps and two bolts, tightly wired in place. This gave no more trouble.

One other major change in the layout, which appears to have taken place during the 1954-55 winter, involves the position of the rocker shaft. On early engines, the shafts were so placed that the closing cams rotated "into" the bell crank fingers—in other words, from the finger tip toward the pivot point. This isn't the best from the loading and wear standpoint, so the whole works was switched around to allow the big cam to drive from the pivot out.

As the engine is placed in the chassis, the early shafts were on the "lower" side, and they're now on the "upper" side. The cams turn counter-clockwise, as viewed from the front, and, as a matter of fact, so does the crankshaft. Rotation of the driveshaft has been kept clockwise, as in most cars, to have someplace to start.

To take the lifting stress of the rocker fork, plus the opening forces, the end of the valve stem has been forged larger than

Fierce But Friendly

(Continued from page 37)

tremendous area, the shoe having an effective width of 2.250 inches and the drum having a diameter of 12 inches.

The Engine

The power plant that delivers torque so impressively is the work of Max Balchowsky, a long-time Buick enthusiast. In discussing the Morgensen engine with Max, the impression came through strongly that this particular engine has suddenly and startlingly borne the fruits of all he has ever learned about Buicks. It idles from 300 to 400 rpm and will actually pull 8000 in third. Hauser will not admit to the use of more than 7000, however. The fact that on a course such as Paramount only a second a lap would be lost if you threw the gear lever away is a healthy endorsement of Max's methods and makes a close look at this engine worth while.

The cylinder block, the heads, and crankshaft assembly are '56 Buick V-8. The stroke, of course, is the stock 3.2 inches but the cylinders have been bored to 4.125 inches, an increase in bore of .125 inches and an increase in the swept volume to a total of 342 inches. Jahns pistons are used and supply a compression ratio of 9.25 to one. Ignition is by a Buick unit modified to Harman Collins specifications with dual points and two coils. The oil sump has

the stem itself. This, plus non-detachable head construction, complicates installing the valves. The trick lies in having removable *split* valve guides. The upper end of each half-guide has an integral collar, which is both held down and kept from rotating by the bottom end of the inserted tappet guide. One side of this guide is also cut away to allow the fork to reach the valve stem. Finally, the tappet guide is held in by a nut and washer, placed at one side. To review, the nut and washer hold down and locate the tappet guide, which in turn holds down and places the split valve guide.

Lubrication up here is thorough and studied. One gallery runs the length of each cambox, at the base of the tappet guides and through holes in the latter. There's also the supply to the rocker shafts that we mentioned. In addition a gallery runs along each cambox, at the level of the tappet shoe and on the opposite side from the bell cranks. Just opposite each tappet a hole is drilled and tapped, and a calibrated jet is screwed in and locked. This gives precise control of a jet of oil aimed right at the working surfaces.

With the racing versions of the 196 engine, noise was not a problem. This being the case, the valve gear covers were held down both by studs around the outside, and by nuts on extensions of the cam bearing cap studs. This held the covers on well, but transmitted a lot of operating noise to the surface of the cover and on to the ear. In the present search for silent running, the bearing stud extensions have been eliminated and the number of surrounding studs increased from four, on the earliest engines, to thirteen on the latest. To "economize", the two cam covers on each block are interchangeable.

Frankly, we could go on forever analyzing the unusual features of this powerplant. You can see a lot more in these drawings: The fabricated breather baffling, the complex oil distribution system, the ducting of cool water through the center of the crankcase casting, and the gasketing and sealing methods. General opinion is that this engine will never be produced in anything like its present form. We just wonder, though, when we see the steady, directed research that is still being carried out, side-by-side with the development of new production models. If anyone can do it Mercedes can and if it's necessary for either publicity or competition they won't hesitate. *Karl Ludvigsen*

been enlarged to ten quarts and the oil temperature is controlled by a seldom-seen method. Fixed in the pan is a layout of .750 inch diameter tubing that circulates water from the radiator through the oil. This warms up the oil quickly on starting and tends to maintain a temperature balance between water and oil on long runs.

The top end of the engine shows Max's reluctance to go along with what others are doing, and results show that in engine building too there is more than one way to skin a cat.

The heads have not been radically reworked. The ports, other than nominal cleaning up, have not been touched, although the combustion chamber is pol-

(Continued on page 62)

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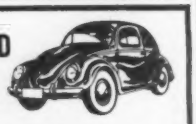

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Fierce But Friendly

(Continued from page 61)

ished and relieved slightly around the valves. The valve diameters are extremely modest, the intake valve measuring 1.750 inches and the exhaust valve, 1.250 inches. If the valves are small, the cam is big. An Iskenderian grind, it's called the LDB special. The intake opens 33 degrees before top dead center and closes 77 degrees after bottom dead center. The exhaust opens 77 degrees before bottom dead center and closes 43 degrees after top dead center. This gives duration and overlap seldom seen in anything other than an aircooled racing motorcycle. Intake duration is 290 degrees; exhaust 300 degrees, and overlap, 76 degrees. In these days of fuel injection and dual quad carburetor installations, the six Stromberg 97's on log manifolds might seem an anachronism, but they work. Max admits that they are not fancy, but gives them the credit for a lot of the flexibility of the engine. The headers are simple four-branch units fabricated by Hough on the direct approach principle.

The flywheel is Buick chopped to 25 pounds. The clutch is an Auburn 10 inch unit that seems small but hasn't given any trouble. Friction material is Johns-Manville, and the clutch is operated by a hydraulic master and slave cylinder.

The Jaguar gearbox joints to the engine with a Cook adapter and is a type JH with the normal wide ratios.

The power plant has never made the acquaintance of a dynamometer, but on the basis of the car's performance, its bhp could hardly be less than 300. What the torque must be defies guessing, but it would certainly be interesting to know.

A '54 Chevrolet sedan supplied the radiator, which has proved adequate. It is located well forward and the filler opening is in the upper return hose.

Gas capacity is 22 gallons with the tank located over the rear axle.

Ford 15 inch steel wheels are used front and rear with Firestone tires. The tire diameter in the rear is 8.00 x 15; in the front, 6.50 x 15.

Body paneling is extremely simple and is for the most part fixed semi-permanently to the frame. The front fenders are no more than simple wheel shrouds designed to meet the specifications. Sheet aluminum is used for front fenders, engine panels, cowl and for the hood which hinges forward. The rear fenders are direct grafts from a '49 Chevy pickup and the turtle deck is sheet steel.

The hardwood instrument panel carries a complete layout of Stewart-Warner gauges.

To close this without putting down something of the personality of the Morgensen would be a mistake. Anything this powerful and fast is usually reported as being a tiger, growling and ominous. The Morgensen, instead, seems as patient and friendly as a St. Bernard in spite of the arbitrary way it deals with time and distance.

Only one conclusion is possible. The Morgensen is a big step toward domestic products dominating our road courses.

Russ Kelly

Metropolitan

(Continued from page 41)

Seats are high and firm and vision all around is excellent. Entry to and from the car is easy even for the six and over footers. The front seat is one piece from door to door and offers no lateral support. There is good support under the thighs, and the back rest is inclined at a very comfortable position. With adequate arm and shoulder room, a third passenger can ride up front without too much discomfort. The rear seat is only a suggestion—with no headroom, but will accommodate one adult sitting sideways for a very short trip. For children it's ideal. They can be thrown back there with the laundry bag and practically forgotten until home again. Driving position is erect, chair-style, and all the instruments are within fingertip control. Six and over footers, however, will find driving quarters cramped with knees wedged against the dash panel. The lever-type handbrake is on the left, placed well forward and upright. Very easy to use.

Interior appointments are nicely finished, being neither the ultimate in luxury or shoddy or cheap. A map light is placed conveniently under the dash and can be used for a courtesy light as well. The heater is thermostatically controlled and anything from very hot to moderate cool can be selected by pulling the knob out to various positions. The heater fan is controlled by twisting this temperature knob. Windshield wipers are electrical and noisy. The defroster can be relied on to de-fog or de-ice with efficiency—with all windows closed and three adults blowing smoke or hot air on the windshield. The cowl air-intake is ducted directly into the heater so that when driving it is unnecessary to have the heater fan whirling in order to get heat. In this way a fresh stream of air into the car is insured even with the windows buttoned up.

The dash panel is neatly laid out and the instruments, what there are of them, are easy to read. The speedometer sits directly in front of the driver unobstructed by the steering wheel. Ammeter and water temperature gauges are conspicuous by absence and replaced by two tiny red warning lights at the bottom of the speedometer. Included in the price is a radio: clear, loud and sensitive. The dash pocket is only a vestige of what was traditionally a glove compartment. The trunk is accessible only through the rear seat back rest which is hinged to form a door and can be locked. Space in the trunk is minimal, full of sharp edges and corners. It's not meant for much use, the "back seat" being a good spot for short-distance package carrying.

Wherever we parked, the car always gathered a cluster of interested spectators whose remarks were invariably complimentary especially when they were told the price — $1529 complete. That's the general feeling from here and from the public — an excellent city car that is also good for short trips.

— Albert Prokop

Devin Panhard

(Continued from page 43)

At Palm Springs (as well as the previously mentioned Pomona Show), a revised engine containing certain motorcycle parts was utilized. Here the blue and white roadster looked by far the best of the field running seemingly under wraps and took a class win as usual.

Using the Panhard crankcase, roller bearing crank assembly, and rods as a base, Devin has affixed a pair of Norton "Manx" motorcycle cylinders which are topped by an overhead cam layout. To drive these cams, one per head, a notched rubber transmission belt is used. It sounds easy enough and looks quite natural when viewed in the completed shape but the whole project has been carried on in the face of "it'll never get off the ground" type of predictions. "Anybody will tell you that you can't use a rubber belt for valve timing," Devin says, "but we are doing it anyway."

The use of notched rubber power transmission belts to operate cyclic or timed mechanisms is not unique, naturally, being in constant industrial usage, but this marks the first successful automotive application to our knowledge. Advantages of the 1½ inch wide belt of molded rubber, bonded to a continuous steel wire base, over the more conventional chain or gears, are many. Lighter in weight, therefore lower in inertia, far more likely to disintegrate slowly than to snap suddenly, and needing no lubrication nor housing, the U. S. Rubber product certainly gets the nod . . . if it doesn't stretch.

Such belts have been tried on superchargers to replace V belts, which suffer from considerable slippage, but sheared pulley keys and pins soon proved that their action is too positive. In this cam driving application the belt has proven admirably suited, although many prophesied that under severe acceleration there would be enough resiliency or backlash to foul up valve timing. But, no stretch!

A machine adaptation for the front of the cam housing on the Norton head, with its hairpin springs, eliminated the tower shaft and several gears. As she sits, a notched pulley with 14 teeth on the end of each camshaft is driven through its own belt by a 28-tooth pulley on the front end of the main shaft . . . a spot formerly occupied by the generator pulley. Two idlers maintain tension.

Grafting the Norton cylinders onto the Panhard case required filling the original stud holes with ¼-inch aluminum bolts and drilling new holes to accommodate the 7/16-inch Norton studs. There is no difference in displacement as a result of the switch, inasmuch as the bore diameter of both makes is the same: 3.12 inches. The Panhard stroke of 2.94 inches produces an oversquare engine. Although the Norton barrels are somewhat larger in overall size due to the greater fin area,

(Continued on page 64)

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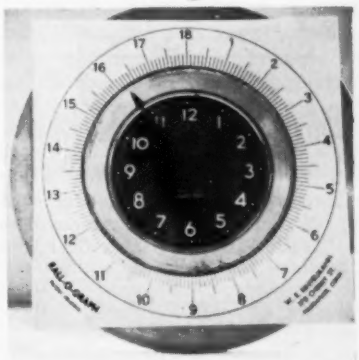

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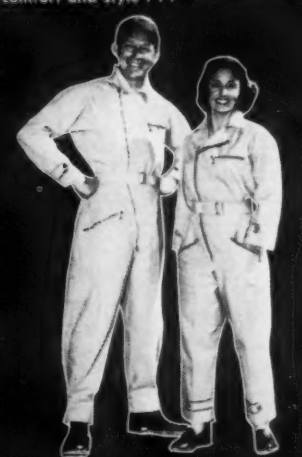

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Devin Panhard

(Continued from page 63)

there is no appreciable gain in weight, inasmuch as the Panhard is cast-iron-sleeved and the Norton all lightweight alloy.

Superimposed over the stock but overstressed bottom end, we find a big-ported head, straight-through porting, monster valves . . . 1-27/32 inch intake and 1¾-inch exhaust. A compression ratio of 9.5 to 1, effected through the use of Norton hi-dome pistons, is about the maximum desirable for gasoline fed through twin-choke Italian Weber carbs on Y inlet manifolds . . . one for each cylinder. The flywheel has been lightened through replacement! Not to overlook details, Devin whittled out a duplicate in aluminum and pressed on the steel starter ring gear . . . saved 8 pounds and gained much accelera tion.

With cams designed for cycle racing, a normal opening and closing sequence reads something like this: Intake valve opens 57½ degrees BTC and closes 60 degrees ABC, Exhaust opens 85 degrees BBC and closes 42½ degrees ATC. With 42 degrees spark advance this can be considered a bit radical but the best is yet to come: The cams are assembled, and lobes can be fitted onto the shaft at any degree relationship. Want to try opening the intake a couple of degrees sooner? Fine. Disassemble the cam, move the lobe a notch and put it back together! Endless possibilities.

What actual timing he will run on a different "New" engine, Devin keeps to himself. Data on the improved model is also confidential but, as one who has been permitted to view some of the actual construction, we can say that the latest cross-breed will employ FOUR overhead cams, twin ignition and fuel injection.

"What kind of a small car can a fellow buy today that can be driven to the track and stand a chance of winning," Bill asks, "and what do you have to pay for one? Almost as much as for a much bigger car. Anything in the 750cc class you have to build yourself. I've spent $75,000 developing this thing and if I had another hundred thousand I'd build a hundred push-rod Devin Panhards. I've made arrangements with the factory for components and the bugs have been worked out of my new body. I could make and sell such a car, complete, for $2,250 or $2,450 with a hard-top. You could drive it on the street every day and yet go to the track and run with the best of them. I think I've proved that."

The story is familiar but the ending is yet untold. The difference in the plot as it looks from here is in the one word, "ability". Here is a man with ability. A man with a dream, true, but backed by enough persistence and know-how to go far beyond the conventional for a solution to his problems. Perhaps a financial solution will be found as well and we will be thrilled by the pants-ripping snarl of a flock of Devin-Norton-Panhards in future races.

Ocee Ritch

Daytona

(Continued from page 31)

beach was no longer unknown, but still dangerous, as witnessed by a flipping T'bird that hospitalized its driver. In no time at all the line of cars began to move and we warmed up the Fury engine while getting familiar with the seldom-used clutch and cog box. Only three cars from the start line. The windshield was cleaned, windows checked, ventipanes set—then we had to move forward. Only two cars now. We tied the seat belt and latched the unused belt so there would be something to hold onto in case of a flip. Move again. Nothing more to do with the Fury, but watch how the preceeding driver takes off. Not so good. He was caught in deep ruts.

My turn now.

I pulled left, straightened out into the trap over clean uncut sand. A dirty look from the steward. He had to move, but we got a good start. I checked the shift—it was already in low. Somebody yelled, "Stand on it." The idiot, what did he want me to do; plant an anchor? The window was up, the starter checked me out, flipped the green. We were off again.

The wheels spun a little, but the Fury really moved. At 50 I slammed through the gate to second. The car fishtailed under full power, but it made little difference. We were accelerating too fast to lose much from wheel spin. At 85 we tied to high, the first mile behind us, foot in it all the way. The beach was smooth, fast—then quiet. Markers seemed only inches away from each fender, spreading slightly apart to let us pass. The first timing cable came into view — the speedometer read 130. "Snap" the cable was underwheel, then behind. I was talking to myself, "Hold it steady, let power steering do the work, keep a light grip, where are all the people? Don't worry about the speedometer, it's not accurate anyhow. Don't get sleepy—this is no time for a nap. What odd things to think about. Whoops, here's the other end".

"Slap," and out of the measured mile with the huge grandstand only a black blur to the right. Now I sneaked a glance at the needle. It read 142. Slowly my number twelve backed off the "go" button and we slowed to 100. Then 80, finally 60 before brakes brought our flying Fury to a sedate pedestrian pace. The south turn flagman waved us to a line of cars ready for the northbound run, where we idled the engine for a few cooling minutes before shutting off.

Time was a thumping 124.181 mph, placing our Fury in the upper third of speed iron, the fastest of which hit 139.969. Not bad for a truly stock Fury, tuned by a dealer's mechanic, driven by a writer. This made it the fastest stick-shift stock Fury on the beach, and ours was the fastest run it made.

Next year, wind, waves, weather and NASCAR permitting, we'll be on the beach again, for an even faster run through the famous measured mile of Daytona Beach.

Bill Carroll

Sebring

(Continued from page 45)

"Yah. Ya might wear 'em 'til ya get outta town, but they'll be too much trouble on a trip that long."

On the contrary, after wearing seat belts for a while, one becomes so accustomed to them that it is an automatic reaction to undo them every time you get up from your seat.

Because it was necessary to obtain time off from work to make the trip, the scheduling was very tight, to minimize that time. While it was intended to allow a reasonable driving time, there were a number of hours allotted to sleep. At Sebring, everyone wants to be fresh for the race. Unfortunately, a slight miscalculation of 300 miles absorbed the sleeping time, but what matters a little lost sleep? Sebring had been reached, and the race was too exciting by far for sleep.

After such a long trip and such a fierce race, the 1450 mile homeward trek seemed a dull and anticlimatic, if necessary, task. And, indeed, except for putting seventy four miles into one hour once, the first 500 miles *was* dull.

Then came the blow! DETOUR-BRIDGE OUT said the sign. Which was true enough, but not very explicit. There was a bridge out, all right, but it was on the detour road. Sailing over the crest of a hill at seventy, the Porsche was suddenly suspended in mid-air as the roadbed was replaced by a river some two feet lower. Two quick bounces and the car was on pavement again, only the low-mounted horn damaged.

"What was THAT?"

"Road washed out."

"Oh."

"It's all right. We don't have to go back."

Another sign: BRIDGE-OUT—ROAD CLOSED FROM BARLOW'S MILL TO HIGHWAY 76. Trapped! Impossible to go on, impossible to go back.

The Porsche was off course considerably, but this provided the opportunity to explore the true rural south far from main interstate highways. Considering that they had never seen such a thing as silver and red Porsche in their quiet towns before, the natives seemed quite friendly.

The remainder of the trip proved to be uneventful, but the harrowing experiences just past provided a lively topic of conversation.

It was easy to tell, even in a state of extreme fatigue, when Michigan was reached again. Just two days after leaving the sun drenched course at Sebring, a fresh six inch snowfall greeted the weary travelers.

A co-worker later exclaimed, "My gracious, you fellows certainly have a lot of enthusiasm." It seemed better just to smile, walk away, and not mention the motorcycle from Quebec parked in front of the Sebring Hotel. *There's* enthusiasm.

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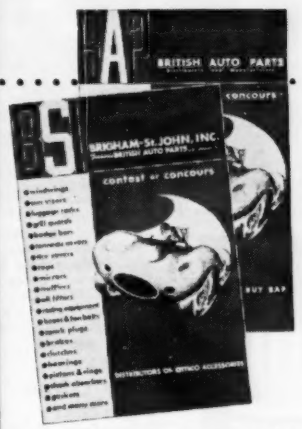

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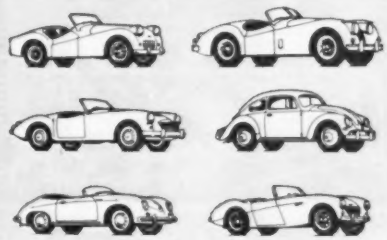

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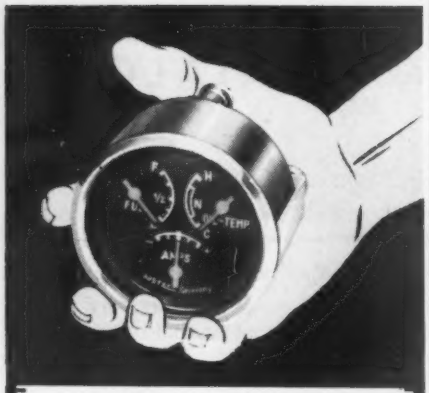

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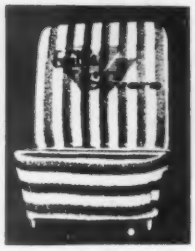

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